

# COAL AGE

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## *Base Permanent Wage on Fleeting Profit*

**B**ITUMINOUS wages are being advanced so that the mine workers can get some part of the profit to be derived from spot-coal prices. This is profit sharing only if, after prices recede so that profits are normal, the wage is pared to suit. The public may condone prices that yield large profits if they are subject to the fluctuations in supply and demand, but if high prices mean wages for some that are out of balance with those paid in other industries and those wages are supported at these unequal levels by the operations of a labor trust the public cannot look on with indifference, for the unusual gains of the industry at any one period will not right themselves but will be perpetuated by the union for years to come. That the union is prepared for every wage revision that is predicated on high prices but is not ready for any correction that is based on a decline is evidenced by the fact that it does not advocate profit sharing or sliding scales but demands wage increases that rise with the tide but are so anchored and moored by a contract that they will not recede with it.

## *Our Method and Theirs*

**O**NE can hardly conceive of a country where men are shot for refusing to work, yet in Russia the Bolsheviks have that cheerful way of coercing the unwilling worker who will not labor for the barest kind of a living and for the longest of hours. Freedom to desist from work—freedom to strike—is forbidden.

Here in America we have a condition just about as bad. We do not view it with much heat, for we have become accustomed to it. In this land, in the year of grace 1920, if a man wants to work and his fellow workers do not want him so to do he is likely to be shot for his obstinacy. We little realize how complacent and indifferent we are. Because labor violence has become so general we are now inured to its frequency.

As we read romances and the history of the Middle Ages we wonder how men lived through all with life so full of menace from battle, murder and sudden death. But it is easily explained. Look at the Kentucky-West Virginia border, where any man may be murdered if he takes up his dinner-pail and goes to work at the coal mines. A few men along the Tug River, urged on by agitators of an organization centered in Indianapolis, have decided that there must be no work till the labor trust, with headquarters in that Middle West city, gives permission, and men are murdered who violate that mandate.

A lawlessness less in degree is found at the mines of the Pennsylvania Coal Co. and in the streets of New York. Till we get a little more sensitive to the heinousness of the offense of assaulting a worker and a little more resistful to the organizations whose strikes

cause such violence we shall continue to have trouble of that character. We coax and condone violence and its unhealthy growth springs up till it destroys our cherished institutions.

## *A Judgment of Solomon*

**S**ANITY has indeed marked the decision of the Anthracite Coal Commission. The public must congratulate Dr. W. O. Thompson, the chairman of that body, on having preserved the rights of the public free from spoliation. The mine workers get a slightly larger increase in wage than was offered them by Secretary of Labor Wilson, but the difference is unimportant.

Bituminous-mine workers demanded from the coal commission by which their case was adjudicated that a higher wage than normal should be paid them so as to offset the irregular work which they unfortunately too often had to sustain. The anthracite-mine workers tried hard to show by fallacious arguments that the anthracite miner worked as irregularly as the bituminous miner and, therefore, was entitled to an equal wage. To that end they laid special stress on the irregularity of employment in earlier decades. Fortunately the commission, recognizing the perpetual shortage of anthracite coal and the uninterrupted shipping facilities it enjoyed, discountenanced the attempt that was made to prove that the record of steady running since 1916 was merely a temporary symptom and not a broad, underlying and reliable condition on which a wage rate could be safely based.

If the commission had accompanied its decision by a too ready acquiescence in the demands of the miners for a restriction of the anthracite industry, its rationality in the matter of wage would not have been without countervailing disadvantages. Fortunately it leaves the industry entirely unhampered. The miners sought to have subcontracting forbidden. The commission on the other hand, declares for freedom of contract but requires that on the complaint of any employee affected such contracts be made subject to revision by the Anthracite Conciliation Board.

Nothing is more dangerous than to produce a condition by which the introduction of machinery is hampered. It is well understood that the object of the union in seeking the abolition of subcontracting was not to abolish the underpayment of the employees of the subcontractor, for their wage was assured them, but to do away with the use of machinery and methods which were employed under that system.

Progress in mechanical devices will help the anthracite operator at least to meet, if not to more than meet, the greater cost with which mining is accomplished and to make up for the lack of miners from which the anthracite region suffers and seems likely to suffer so long as the Gallagher Law continues in its restriction of the labor field. It would be extremely dangerous to put any obstacles as to machinery or methods in the way of economical production. The interest of the

public is clearly at stake in any attempt to freeze the industry permanently into its present condition of development.

The miners have insisted that no contract shall be made on a tonnage basis where machinery or a new system has been introduced. Consequently the work must be paid by the day and close supervision of the subcontract system is needed in order that the relatively isolated labors of the day workers may be performed with the necessary dispatch.

Public interest in the award centers first on whether the miners will accept the decision to continue at work, thus assuring a supply of fuel for homes this winter, and second on what effect the award will have on the price of coal. The change, if any, will be in the mine price. By agreement reached in April the recent award is to be retroactive to April 1. By the end of last April most, if not all, of the producing companies foresaw that as the advance in wages was to be retroactive it would be necessary to advance the price of coal \$1 per gross ton on domestic sizes, in order to correspond with the 20-per cent increase they had offered the miners.

The award of the commission provides increases ranging from 17 to 25 per cent, which are believed to approximate the average increase of 20 per cent offered by the operators last spring. There should, therefore, be no advance in the mine price of domestic sizes as a result of this award. The price of coal to the consumer, however, will be higher in September than in August by the amount of the freight advance, but no one should complain that the operator has raised the price of his coal until he is certain that the increase is larger than justly chargeable to the raise in freight rates.

### *Again We Function Badly*

STRANGE indeed seems Herbert C. Hoover's superior knowledge of the coal business. He appears to believe that the operations of coal production and distribution form "the worst functioning industry in the country," as he expressed it at the banquet of the American Institute of Mining and Metallurgical Engineers recently held at Minneapolis. It is true that the coal industry is indeed functioning badly, but equally so are divers operations, mining and other.

The miners in the coal regions are not working steadily, and they do not work any more continuously in the copper industry, where there is demand for little more than half-time operation. They do not work more regularly in the open iron pits of the Mesabi region, which the speaker, Mr. Hoover, visited with the members of the institute on the day following. The open pits close during the winter season.

For three months ore is not loaded by the big steam shovels, because the ore from trip-pits is under suitable storage in the depths of those open workings and it is not well to load it into cars only to unload it again a few miles away when it could be loaded direct for shipment to the Lakes during the summer season and thus save one handling. Note that this is the precise reason which makes the coal mines shut down rather than store coal.

As for the gold mines would anyone say that they function well with the present low price of that commodity? As has been remarked before editorially, the trouble with the coal fields is statistics. We know the defects of the coal industry while those of other fields

than ours are less generously known and published.

But it will be said that the coal which the public wants is not produced. That is due to lack of transportation, and here there is no desire to enter into controversy with the railroads. It may be conceded that they may be, and even are, able to haul all the coal the consumer wants if the demand is distributed. Unfortunately the load is not so spread over the whole year. Dilatoriness on the part of consumers, strikes of mine workers and of switchmen have disturbed conditions, and a large tonnage is required to make up for these dislocations.

The same kind of irregularity in demand and discontinuance of operation from strikes occurs in the immaculate copper industry, but its demands for transportation are light compared with those of coal, and so the railroad service is able to meet any of the unequal demands of the copper producers. But, as between coal and copper mines, that does not put the burden of inadequacy on the coal mines. The onus for meeting demand when it occurs is on the railroads. They must meet the peaks of coal mining as readily as they surmount the high spots in copper production or the attempt to put the blame on the coal industry and save the copper industry will not be successful.

In fact one of the first duties of the engineer who seeks to get at basal facts is not to berate the coal shipper, who is almost always there with the goods, but to help the carrier that cannot transport them. The railroad inadequacy is the greatest of our problems. If it had not been for the inability of the railroads to meet peaks of transportation demand, there would not be such an excess of coal mines, so many fly-by-night companies, such an excess of mine labor and such outrageous prices demanded by certain individual operators. The work of mining would be performed with less men, needing less pay, having less irregular habits and less disposed to strike. The principle of "largest matters first" should make us seek to tackle the railroad question when entering on the coal problem.

We have had a dose of socialism in the too rigid control of railroads. Mr. Hoover would give us a draft of the same medicine to cure the coal conditions thereby resulting. Next we will have to have another dose of socialism to cure the situation brought on by socialistic control of coal. Indeed we may recur to a Byzantine regulation of all industries and industrial workers.

Let us purge ourselves of the follies of excessive railroad control and many other false steps will then be avoided. With due respect to Mr. Hoover's judgment it may be said that every rightly-conducted industry has a little excess of equipment, every piece of steel should have a factor of safety, every man should have a certain degree of reserve strength. We cannot go on with equanimity having everything fitted as scientifically as "the one-horse shay." Socialism has tried to fix the earnings of the railroads by that parlous rule. It has sought to keep the railroads efficient by regulation of traffic instead of giving that factor of safety which will permit of the unforeseen. The transportation system of the United States demands a peakless load. It cannot be conceived. We must slow down industry as a whole to take care of the peaks or build up the railroad business so that it can sustain them, or we may do both concurrently, but we can never arrive, especially if labor continues its unrest, at a waveless existence without troughs of low production and crests of feverish activity.



### **Railway Men Get \$23,000,000 Back Pay**

The Pennsylvania Railroad began on Aug. 28 distributing to employees the bulk of the back pay ordered in the decision of the U. S. Railway Labor Board of July 26. Approximately \$23,000,000 will be distributed to the 275,000 to 280,000 workers.

### **Excess of U. S. Exports Shows Slight Gain**

Exports from the United States during July, according to *Bradstreet's*, increased 3.6 per cent over June, while imports fell off 2.9 per cent, making the excess of exports \$117,000,000, which next to that of June is smallest since late in 1914.

### **Commerce Commission Suspends Railway Currency Rule**

Pending investigation the Interstate Commerce Commission on Aug. 31 suspended rules of certain Southwestern railroads requiring payment of freight charges in American currency on through shipments to Canada. Some doubt was expressed as to the right of the carriers to impose such a rule on traffic moving in Canadian territory and the commission postponed the effective date of the regulations from Aug. 31 until Dec. 29. Application of the requirement to traffic between points in the United States was not affected by the suspension.

### **Head of Trade Commission Is to Retire**

W. B. Colver, chairman of the Federal Trade Commission, has notified President Wilson that he does not wish his name considered for reappointment to the commission at the expiration of his term on Sept. 25. In his letter to the President, Mr. Colver said he desired to engage in private business.

### **President to Name New Shipping Board Soon**

That President Wilson will soon name the members of the new Shipping Board created by the Merchant Marine Act is the belief in official circles. It is thought that the new board will consist of a business man, a banker, a shipbuilder, a lawyer, a railroad man, a ship operator and a naval officer. Requirement that the appointments be geographically distributed is thought to be delaying the naming of the board. Two of the seven commissioners come from the Atlantic Coast, two from the Pacific Coast, one from a Gulf state, one from the interior, and one from

the Great Lakes section. The act also requires that not more than four members of the board shall be of the same political party.

### **Industrial Board Moves Office to New York**

In order to be nearer the heart of the manufacturing center the National Industrial Conference Board, composed of twenty-nine national organizations of manufacturers and representing industries employing a total of 7,000,000 or 8,000,000 workers, has moved its headquarters from Boston to New York City. General offices have been opened at

## **NEWS BRIEFS**

### **Terse Items Chronicling Events of Interest to the Industry**

10 East Thirty-ninth Street and the board has taken along the greater part of its research staff, said to be one of the largest for this work in the country.

### **Nearly 5,000 Ships Pass Through Panama Canal in Six Years**

The Panama Canal completed six years of operation at the close of business on Aug. 14, 1920, having been opened to commerce on Aug. 15, 1914. During the six years the total number of commercial ships making the transit was 10,573. Their aggregate net tonnage, according to the rules of measurement of the Panama Canal, was 34,540,266. The cargo they carried totaled 40,313,629 tons of 2,240 pounds. This traffic was made up of 4,934 ships, of 16,145,434 net tons, carrying 16,576,778 tons of cargo from the Atlantic to the Pacific, and 5,639 ships of 18,394,832 net tons, with 23,736,851 tons of cargo from Pacific to Atlantic.

### **Lackawanna Coal Plan Denied**

Reports are current that the Delaware, Lackawanna & Western Railroad Co. is working on a plan for the disposition of its coal properties in Lackawanna and Luzerne counties, Pennsylvania. Details of the program have not yet been made public, and the report from Philadelphia

Sept. 1 that a plan was drawing to a focus which involved organizing a segregated coal company with a capital of \$42,277,000 was denied by W. S. Jenney, vice-president and general counsel of the road. Mr. Jenney would not discuss the plans of the company in regard to the coal companies, but it is expected in well-informed circles that an announcement will be made by the end of the month.

### **P. R. R. Fights Bribery in Freight-Car Allotment**

The Pennsylvania Railroad is waging a campaign to break up a practice of some shippers paying bribes to railroad employees to obtain more than their pro rata allotment of freight cars. In some instances, the company states, the suggestion of offering inducements originated with the shipper, while in others the employees solicited the bribes. In all instances where guilt has been proved employees have been discharged.

### **Swagar Sherley Resigns from Railroad Administration**

Swagar Sherley, of Louisville, Ky., director of finance of the railroad Administration, resigned Sept. 1. Secretary Payne announces Mr. Sherley, it is understood, will return to the practice of law. D. C. Porteous, assistant director of finance, has been designated acting director.

### **France Seeks New Methods of Fuel Conservation**

As the provisions of the Spa conference agreement assure to France from all sources slightly less than 80 per cent of her needs in coal French authorities are seeking new ideas for conserving coal and other fuel.

### **N. Y. Central Accelerates Freight-Car Service**

Initial figures on the special effort of the railroads to speed freight cars to an average of at least thirty miles a day, announced Aug. 31 by the New York Central Lines, show a substantial gain, both for 1920 over 1919 and for July over June this year. Eight railroads of the New York Central system show for July, 1920, an average daily movement per car of 26.8 miles, as against 25.9 miles the preceding month; an average of 25.7 miles for July, 1919, and 25.8 miles for July, 1918. In 1919 the average daily mileage of freight cars was, for all roads, 23.1 and the total ton mileage in round figures 395 billions.



Lieutenant-Colonel James P. Barney

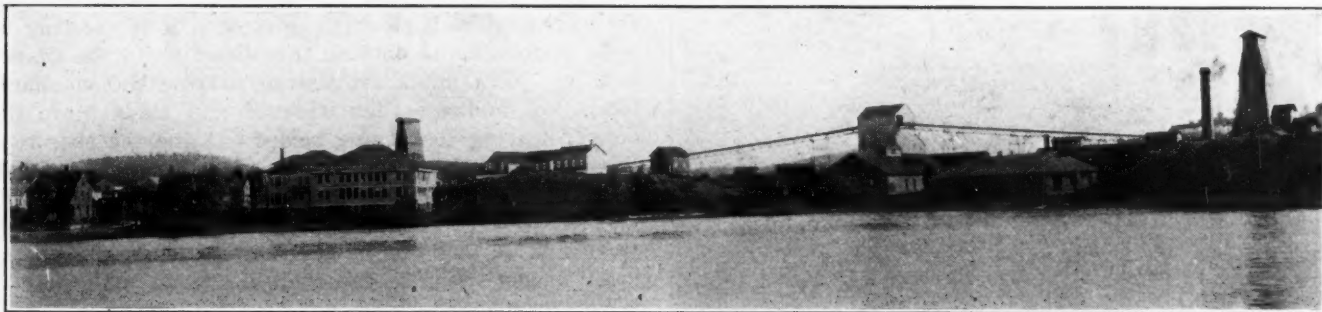
Director of Purchases, Quartermaster Corps, U. S. Army

**C**OAL purchases for the army now are made under the direction of Lieutenant-Colonel James P. Barney, who recently was assigned to that work by the Quartermaster-General. While Colonel Barney's entire career has been a military one, he has had long experience in the procurement of supplies for the army. After his return from France, a little more than a year ago, until his appointment as director of purchases for the Quartermaster Corps he was in charge of such confiscation of coal as had been made by the army. Colonel Barney, as he puts it, had the good fortune to participate in a large number of important engagements in the World War. He has received a long list of decorations, which include

several from the French and English governments.

Colonel Barney began his military experience with the Virginia National Guard. He was adjutant of the Third Regiment of Engineers of Virginia. As a young man he entered the regular army and had risen to the rank of major when ordered to France. He was promoted to a lieutenant-colonelcy soon after his arrival overseas and was assigned to the Sixth British Army. After having distinguished himself with the British he was made assistant chief of staff of the Fourth Division. Later he was assistant chief of staff of the Ninety-second Division and of the Eighty-second Division. Late in 1918 he became assistant chief of staff of the Third Army.





LAKE BANCROFT AT ISHPEMING, MICH., CLEVELAND-CLIFFS IRON CO. OFFICES AND SHAFT MINES  
The shaft houses are shown as they appeared before they were rebuilt in concrete.

## Engineers Visit Copper and Iron Ranges

Mining Men Note Backfilling System, New Method of Tempering Bits to Reduce Breakage, Pump with Almost a Half-Mile Lift, Shaft and Bath Houses, All Suggesting Applications for Coal-Mine Operation

BY R. DAWSON HALL

LEAVING New York about thirty-five strong the party of members of the American Institute of Mining and Metallurgical Engineers on its way to the annual field excursion continually increased in numbers by additions from every section of the country till between 600 and 700 were in the party. There were about a hundred on the "Tionesta" when it left Buffalo on Aug. 20 and about 150 when on Aug. 23 it arrived at Houghton about three hours late, having been delayed by rough weather and a contrary wind that made the outflow from Lakes Superior and Huron through the St. Marys, the St. Clair and Detroit Rivers respectively larger than usual and the current proportionately more rapid.

When at length the vessel did steam into Houghton past the empty coal docks it was met by a din of whistles louder than Houghton has heard since Armistice Day. It was too late for the arrivals by boat to make a trip that afternoon and early enough to partially spoil the

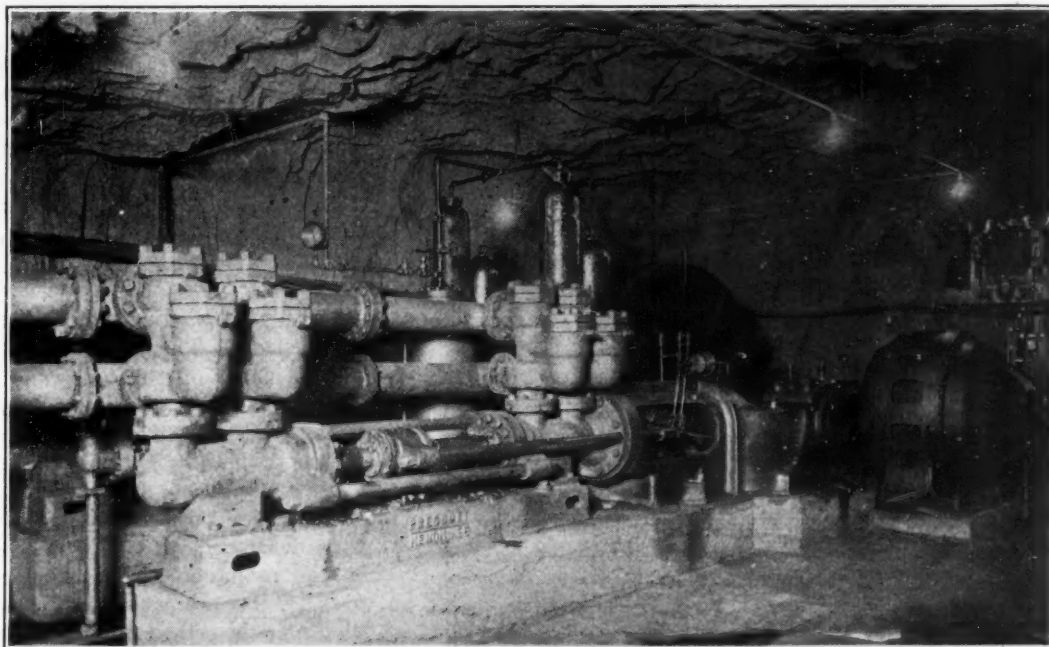
trip of those who, coming by train, had arrived early. However, there was time for a dance at the Onigaming Yacht Club, and never had the floor of that country house been more densely thronged by dancers and bystanders.

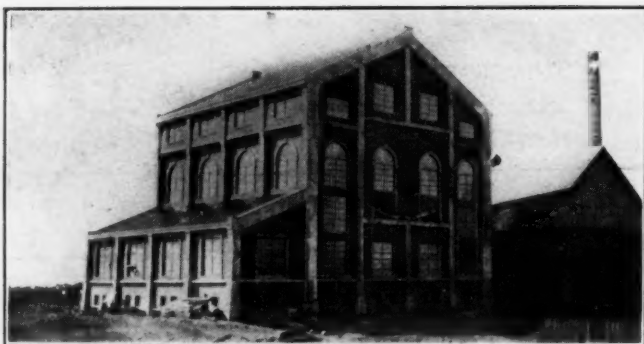
In the iron and copper country, engineers, whether engaged in coal mining or in the production of other forms of mineral than coal, will find many suggestions of value, therefore from the time when the institute landed at Houghton, Mich., till Hibbing had been visited and the party was en route to Duluth points of similarity and variation from methods in use at the mines of the visitors were constantly making themselves manifest.

Before leaving the boat a choice of nine several trips had been offered to the visitors. One was a geological trip and another a visit to the Champion mine; other visits were to the Calumet and Hecla mine, the Mohawk operation, the Michigan and Quincy smelters, the Quincy

### Pump at Athens Mine

This pump, which is operated electrically, raises water at one lift 2,500 ft. and has a capacity of 500 gal. per min.





**HOIST HOUSE, NO. 2 SHAFT, QUINCY MINING CO.**  
This building, at Hancock, Mich., is 76 x 95 ft. and constructed entirely of reinforced concrete. The walls are brick-veneer, and the concrete roof is covered with green tile. All windows are glazed with horizontal ribbed glass and are mechanically operated for ventilating purposes.

surface plant and that of the Calumet and Hecla mine, the Calumet and Hecla mills and reclamation plant and a general tour of the copper country.

#### MINE IN WHICH ALL SPACES ARE BACKFILLED

Your correspondent took the trip to the Champion mine, a plant at which the "poor rock" (that which does not contain a sufficient proportion of copper) is rejected and backfilled. At this time when backfilling for



**REINFORCED CONCRETE SHAFT HOUSE "A" OF CLEVELAND CLIFFS IRON CO., ISHPEMING, MICH.**

This replaces one of the shaft houses shown in the head-piece of this article. The other building has been replaced by a structure of the same character.

anthracite mines is so much agitated it is interesting to note what is being done in this direction in the copper country. The levels are driven narrow and comparatively low and are then widened and made high, the copper-bearing rock being loaded out and the poor rock filled in on either side much in the manner of a heading with gobs on both sides, though the gob in this case is the "poor rock" from the lode itself. As the lode pitches at an angle of 72 deg., however, the gobs on the sides do not reach to the roof, for as to roof there is none except that temporarily afforded by that ore which has so far not been removed.

#### GOOD MATERIAL DROPPED DOWN ROCK CHUTES

The gobs are built by skilled "wallers," Italians for the most part. They do excellent work. The walls they build are 4 ft. through and bound together either with long through stones or wood ties. When the walls are built to about a clearance of 6 ft. logs are laid across them as a roof for the roadway of the level.

At about 50 ft. centers chute holes in the rock walls are left for passage of the ore. However, since the rock wall, unless tied, lacks stability, on either side is set a wood tie-piece to hold the wall together. The chutes are made of rock because wood rapidly cuts out when rocks are dropped down on it through the chute, or "mill hole" as it is commonly termed.

We have now reached the level of the top of the wall. Rock is taken down from the extension of the lode upward. "Poor rock"—that is, rock not worth saving—is dumped on top of the logs and also over and back of the wall till the whole 28 ft. between hanging and foot wall is leveled up except at the chutes or mill holes. These are carried back on a steep grade.

Stone is built up around the bottom of the chute, first in rectangular form, gradually turning later to a rough circle 3 ft. in diameter. Down this the good rock is dropped. At present it is the endeavor to select such rock as will give 35 lb. of copper to the ton. All that will not assist in maintaining that average, which is 1.75 per cent, is discarded and used for backfilling. Careful sampling shows how nearly that desideratum is sustained.

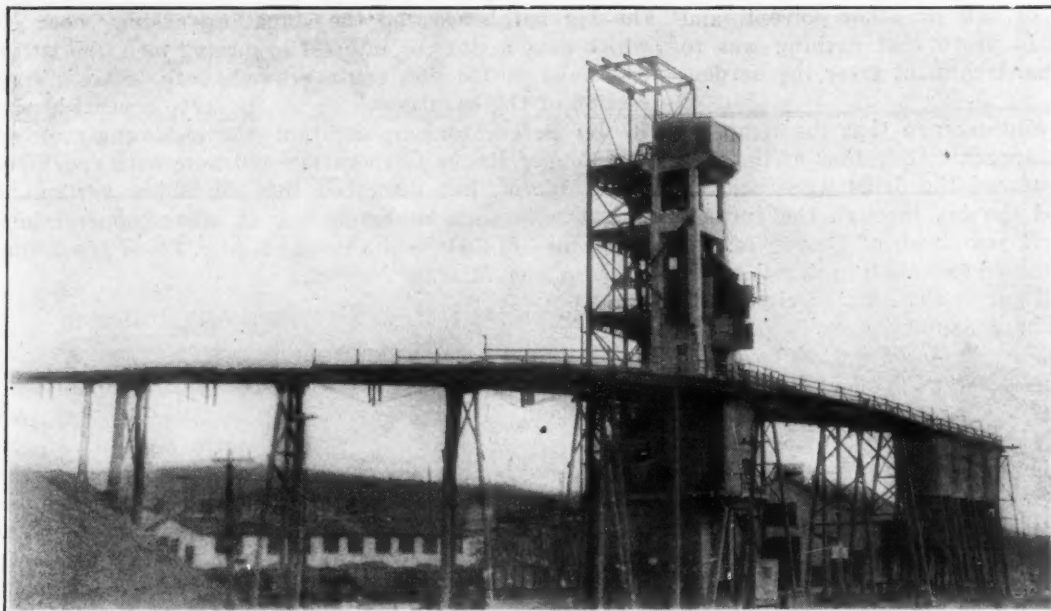
Among the operations of the Lake Superior copper region the Champion mine is peculiar in that all the lode is shot down. None is rejected in place even if it appear poor. After the material is shot down the broken rock is inspected and the best of it loaded out, the rest being used for backfilling. In this manner lifts are taken and backfilling performed until the continuous excavation reaches within about 25 ft. of the level above.

#### EVENTUALLY REMOVE PILLAR BETWEEN LEVELS

It will be understood that there are no pillars left at any time. The opening is roughly 28 ft. wide, which is the width of the lode, and some thousands of feet long. The slab of ore-bearing rock between the long chamber described and the level above is known as the "pillar," though it is really the roof of the chamber. The side walls, of course, are the hanging and the foot walls, which on a slope of 72 deg. are somewhat loosely thus described, so nearly do they approach the vertical.

The management of the Champion mine expects to extract the ore which has been left between the long chamber described and the level above, and it has done so in many cases, but it is not done until the level





### Briar Hill Shaft

Penn Iron Mining Co.'s mine at Vulcan, Mich. Note the temporary stocking trestles and the upright open headframe, so different from some others seen on the same trip.

above is ready for abandonment. Meanwhile the long chamber stands open, unprotected by timber unless unusual weight appears. In such a case props are placed on the top of the broken rock.

The endeavor is to have the backfilling up so high that the short props may be used to afford the necessary support. They are removed when the next lift is shot down. The props then fall with the rock and are subject to little injury. Only a little while ago it was the custom to bring the tailings from the concentrator, drop them down a deep shaft ("raise") to the long chamber I have described, which metal men term a "stope."

These tailings resembled wet sand and contained about 8 lb. of copper to the ton—0.4 per cent. They were allowed to fill the shaft completely. At times, when the miners were not working, a quantity of the tailings was dropped into a box, compressed air was turned on and the box evacuated. The sand was driven all over the store and the floor of the fill was thus raised to any desired level.

#### SAND MUST BE COARSE AND MOVED AT LOW COST

A ruling of the Railroad Administration that the subsidiary railroad of the Copper Range Corporation must raise the rate on the tailings four or five times what it had been before put the method out of business, however, as it made that form of backfilling unusually expensive. Furthermore, just at that time re-treatment of the tailings was commenced. The sand was ground finer and more copper was procured from it. As a result of the regrinding what might formerly have been described as wet sand became wet slime, almost wet mud, and ill-adapted to the pneumatic method of distribution. The better plan was to make a more discriminating selection of ore and fill up the stopes with "poor rock" of somewhat better character than that used before.

The backfilling now provided is not a sand or ash filling such as has been proposed, and adopted, in parts of anthracite collieries. It proceeds on the principle that enough rock can be obtained to fill the stopes completely. Rock when blown down fills more space than rock *in situ*, and, as William Griffith and Eli T. Connor have shown, it is only necessary to blow down a little roof rock to completely fill the space of the excavated coal.

Thick and clean seams could not be worked on this plan. Thin and very dirty seams might be. Perhaps the Champion mine offers a suggestion for anthracite operating concerns. There is no hauling of sand, no system of shafting to the surface, no disposing of volumes of water and no wear and tear of flushing pipes. The refuse of the measures supports the measures. The rejects of today fill the voids of yesterday.

#### NO GUESSES ALLOWED IN TEMPERING STEEL

Another interesting feature at the Champion mine was the handling and treatment of rock-drill steel. Percussive rock drills are not found in large quantities about the coal mines, though they are bound to come into rapidly increasing use. However, regardless of the fact that the percussive drill is not so generally operated in coal as in metal mines the work at the Champion mine is of value as suggesting a new way of dealing with all forms of tool steel around the mines, whether for percussive tools or revolving drills, whether for hand or machine use. Manufacturing industries long ago found the value of such investigations into the tempering of steel, its preheating for forge work and its annealing.

The Copper Range Corporation found it hard to procure competent blacksmiths. Moreover it believed that better pyrometric tests could be devised for treating steel than could be furnished by the eye of the blacksmith, no matter how skillful. Accordingly it provided an oil-heated furnace in place of the former coke furnace, and in this drills after being sharpened are heated for tempering.

This furnace is kept at a temperature of 1,450 to 1,500 deg. Fahr., the heat being indicated by a Taylor signalling pyrometer. If the temperature is too great a red light manifests that fact; if it is too low a green light appears. The attendant can then correct the condition which makes for an improper temper. In fact the pyrometer is ranged to work lights in the office and to signal to the officials whether the right tempering heat is being maintained.

The drills are quenched in water at a temperature between 80 and 100 deg. Fahr. Chloride baths at a temperature regulated by a pyrometer were tried as media for tempering. The bits were quenched in tempering oil, in a 10 per cent solution of salt and in water

without any admixture of salt or other solvent, and the experiments seemed to prove that nothing was to be gained by an additional treatment after the hardening process.

In order to automatically arrange that the temperature of the bit would be approximately that of the furnace into which it was placed the drills were held on a conveyor which moved the bit through the furnace while the rest of the drill remained, of course, on the outside. This conveyor moved slowly and intermittently and by the time the drill points were at the right temperature the drills were in place for removal.

They had received the right intensity of heat and the correct time exposure, and they should be at the right temperature. That this was or was not the case was told by a test of the drill made by causing the bit to approach a hanging horseshoe magnet. The correct tempering temperature is one at which steel completely loses its magnetic qualities. If the magnet is attracted toward the bit, the latter is not hot enough and needs to pass more slowly through the furnace.

#### DURATION OF PREHEATING CLOSELY REGULATED

As a result of these precautions the blacksmith is assured that the temperature to which the steel has been exposed is right, for this much the pyrometer clearly evidences. Therefore if the magnet is attracted the time must be the element at fault. The conveyor delivers a drill every thirty-five seconds, but if the speed is too great it can quite easily be regulated. Those who desire further information regarding this subject should read the excellent paper presented at the Houghton session of this institute on "Handling and Treatment of Rock-Drill Steel at Copper Range Mines," by H. T. Mercer and A. C. Paulson, chief engineer of the Copper Range Corporation, and assistant master mechanic of the Champion Copper Co., respectively, both of Painesdale, Mich.

#### SHOULD ANNEAL BIT AND TEST PYROMETER

The reader will wonder why the heating of the drill bits for sharpening was not regulated with equal care. They are still heated in a furnace fired with coke, although one using oil with pyrometer control will be installed in the near future. The bits are heated to about 1,900 deg. Fahr., the degree of heat being judged by the color.

There are matters which the Mercer-Paulson paper leaves unsolved. No investigation has been made as to the advantage of a double heating process, one for the annealing of strains in forging to which some breakage may be due and one for the tempering of the steel. Not only ought the steel to be hardened, but in all probability strains set up in the sharpening process should be removed.

The Copper Range Corporation, if the absence of statement is to be relied upon, does not check its pyrometer with frequency by the use of a standard couple. If this surmise is correct it is fair to assume that the regulation of temperature is not as perfect as might be wished.

Furthermore, the heat of the presharpening furnace might well be tested, as the temperature given is one that might cause superficial decarburization. The facts given in the paper would have more value to the public and the company if the analysis of steel used in the experiments had been determined.

If there were room something might be said about

the big bathhouse and the signalling system, both of which have a story of interest to mining men, the latter especially suited for engineers who are located in a section of the country where shafts serve several levels. R. H. Bacon, former assistant electrical engineer of the Copper Range Corporation and now with the *Electrical World*, has described this signalling system at length with some others in use at other copper mines on pages 361-364 in the issue of Aug. 21 of the *Engineering and Mining Journal*.

#### QUINCY MINE HAS BIGGEST OF ALL HOISTS

Some of the members of the institute instead of going to Painesdale or elsewhere visited the Quincy Mining Co.'s plant. The hoist now being installed at that mine is a triple expansion Nordberg steam machine. It is said to be capable of hoisting in one stage from a depth of approximately 13,000 ft. The size of the drum—30 x 30 ft.—gives a rough index of the immensity of this unequaled hoisting unit, which so far has been turned over but once. It still lacks much of complete installation. It is housed in a fine hoist building, an illustration of which can be found in this article.

At noon the visitors after a rapid drive northward along the outcrop of the copper lode assembled at Eagle Harbor, near the tip of the Keweenaw peninsula, and there partook of sundry viands, principal among which were some of the celebrated Cornish patties so much favored by the "Cousin Jacks" of the Lake Superior mining regions. Herbert C. Hoover, the president of the institute, made an address on the work of engineers in France. Following this a Cornish wrestling match of barefooted men created much interest. The Cornishman wrestles clad in a strong shirt of sacking which hangs loosely over the upper part of his body. It serves him no useful purpose but is eagerly seized by his opponent as a hand grip wherewith to encompass his downfall or to squeeze the wind out of his body.

The party returned to Houghton through some thirty miles of interesting country. A technical session was held at the Michigan College of Mines, and this again was followed by a dance. Time was short, however, so the latter event was far less well attended than was the dance at the Onigaming Yacht Club the night before.

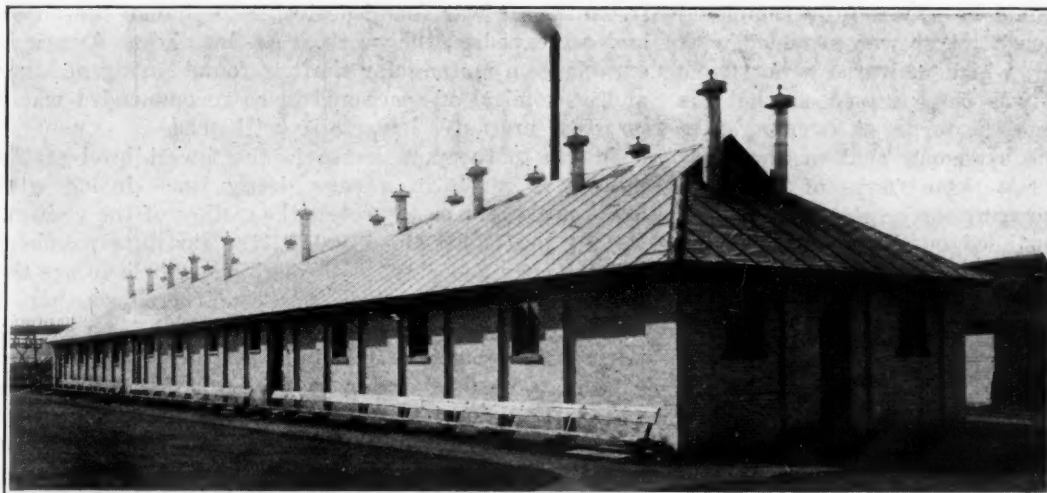
#### HOOVER REVEALS THE REAL BOLSHEVISM

At this meeting also Mr. Hoover spoke, this time on Bolshevism, showing how the Bolsheviks by establishing differential wages, by recognizing ownership of agricultural land and by forcing men to labor long hours under penalty of death and without option to strike, had violated some of their choicest labor creeds. He declared that about 800,000 men in Russia supported Bolshevism with almost religious fanaticism, but the rest were indifferent or hostile, and he added that the workmen got twenty-five votes, the farmer one vote and the rest no votes at all. The Bolshevik commissars themselves declare that only 19 per cent of the railroad cars are fit for use. As a result starvation is close at hand.

At 11 p.m. the visitors bade good-by to the copper country, some leaving for Marquette and Ishpeming in the Marquette iron country and some for Vulcan, Norway and Iron Mountain on the Menominee Range.

Your correspondent went to Marquette and Ishpeming, arriving early in the morning. The first visit was to the Pioneer Furnace and Chemical Plant. The charcoal used for this furnace is made here and from





### Wash House

This building, located at the Ne-gaunee mine, is one replica of the standard type of building adopted by Cleveland-Cliffs Co.

it is derived alcohol, methyl acetone, acetate of lime, acetic acid, formaldehyde, flotation oils, insulating pitch, sodium acetate, sulphuric acid, iron liquor, methyl acetate, special solvents, hexamethylenamine and pure creosote. After this the party automobilized through Presque Isle past the large reinforced-concrete Lake Superior & Ishpeming R.R. dock, and then on to the Cliff mines of the Cleveland-Cliffs Iron Co. at Ishpeming.

### MERITS OF SHAFT HOUSES AND HEADFRAMES

At the Cliff plant are located two shaft houses which have long been landmarks in that district. Because of the severity of the climate it has been regarded by some as advisable in this region to house shaft headframes or to make headframe and shaft house a common structure. A similar disposition has been noted in Europe. Even the oil derricks in Russia are closed in by nailing plank between the outer posts. The custom is general also in building the heapsteads at mining plants in England. In most cases in America this plan has not been followed. It tends to prevent the access of air to the shaft. It adds to the expense of installation. The building is apt to be in the way. In case of an explosion the certainty that it would be demolished would be a factor which could not be overlooked. A headframe might and probably would escape, but a shaft house would resist the expulsion of air and its destruction would be inevitable. The claim is made, however, that the reinforced-concrete shaft house is constructed at less cost than would be a solid steel headframe of equal strength and capacity.

Even in the Marquette range doubt exists as to the value of a shaft house. The headframe is often left bare and alongside of it is erected the bin or storage pocket for dumped ore. An excellent description of the Cliff shaft houses is contained in an article presented to the institute at Houghton at the technical session referred to. They are of precisely the same design; 33 ft. square inside with solid vertical walls for 31 ft. which taper till they are 21 ft. square at the eaves at a height of 88 ft. 9 in. above the ground level. Above this is a pyramidal roof, making the total height 96 ft. 9 in. above the footings. Except where additional sheds have been built outside there are fourteen windows on each side and there are three doors. The three floors above the ground are reached by ladderways.

The shaft house was built while the shaft was in operation, and arrangements had to be made so as not

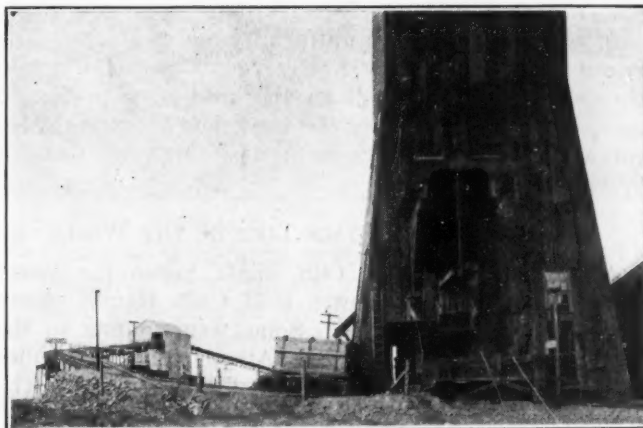
to interfere unduly with the construction work of the shaft house that was being replaced. The beams for the floors were designed for a safe load of 200 lb. per square foot and the floors themselves are made of 3-in. plank.

Work on the new shaft houses was started on July 21, 1919, both houses being built at the same time. The A shaft house was completed on Dec. 6, and required 725 cu.yd. of concrete; the B shaft house was completed on Dec. 11 and required 1,014 cu.yd. of concrete. The work of tearing down the inside forms at both shaft houses was commenced soon after. A total of 132 working days was required for the work; 55 working days were expended in pouring concrete and 77 working days in building forms and reinforcing. The maximum amount of concrete poured in any day was 52 cubic yards.

### HOW COLD-WEATHER DIFFICULTIES WERE MET

The shaft houses were built and poured in sections, varying from 6 ft. to 16 ft. in height. While the forms at one shaft were being filled those at the other were being extended. On the entire job, hoisting in the shafts was interfered with only once; that was for four hours on Saturday night when it was necessary to stop the skip while the beams in the A shaft were being poured.

At first the pouring of concrete was done on both the day and the night shifts, in order to reduce to a minimum the number of lines in the walls. When cold weather set in, the height of the pour was reduced



SHAFT "A" AS IT APPEARED IN 1911

Note that the building is covered with steel plates nailed to a wooden structure. In front may be seen a five-fingered chute gate.

to such an amount as could be successfully completed on the day shift; also, each mixer was provided with a Hauck kerosene blower, which delivered a hot flame into the aggregate as it was being mixed, so that the concrete was delivered into the forms at a temperature of about 80 deg. F. The extremely cold weather that existed throughout the last three weeks of the work necessitated further precautions against freezing. Steam radiators were installed on the inside near the top of each shaft house; the outside forms were packed with straw between studdles; and a second line of boards was put on. In addition to this, tarpaulins were hung on the outside. When the thermometer was at zero the concrete twenty-four hours after pouring was warm to the touch.

The crew employed consisted of fifteen carpenters, including one boss carpenter; nine reinforcing men, divided into three gangs of three men each, and two puffer men; twenty-four other men were used but only when pouring was being done. A blacksmith and helper were used part of the time for cutting and bending bars. The job was carried to completion without a serious accident, only a few minor cuts and bruises being sustained.

#### GRASS AND GARDENS AS IN A PRIVATE ESTATE

The Cliff shaft houses are in the town of Ishpeming, and the Cleveland-Cliffs Iron Co. wanted them to be objects not only of utility but of beauty. To this end they subjected the plans made by their engineers to an architect who transformed them from their original likeness of a truncated tetragonal prism superposed on a cube into the comely shapes they now bear. The garden features are characteristic of the plants of the company. No such greensward and flowering plants appear around the mines in the Mesabi iron region or in the Lake Superior copper region and there are few, if any, coal mines with such carefully-kept environment.

Some disorder there must be where ore has to be stocked, but there are coal mines where there is no stocking and where some semblance of the beauty of the Cleveland-Cliffs yards might be imitated if interest in the matter were shown. At first the men employed used no care to keep the yards free from paper and discarded comestibles, but the diligence of the company finally resulted in converting the men to a sense of order. Even the timber yards now are orderly and, of the ore piles and rock dumps it can at least be said that they are laid out in an orderly way, while the trestles are erected with uniformity and neatness. The grass and flowers grow neatly round even the wash-houses, or "dry houses" as the iron men prefer to term them. Everything is neat and permanent in appearance and that fact seems to be duly appreciated by the men employed.

#### GREATEST SINGLE STAGE LIFT IN THE WORLD

After inspecting the Cliff shaft house the party motored to the Wawonowin Golf Club House, where a buffet lunch was served. Some went golfing in the afternoon but more visited Athens and Negaunee mines, both Cleveland-Cliffs Iron Co. properties. The Athens shaft, which is vertical, was sunk between 1913 and 1917 and its depth is 2,489 ft. It is of concrete construction throughout. The first 1,100 ft. is circular and 17 ft. in diameter and the rest 10 ft. 10 in. by 14

ft. 10 in. It was found desirable to change the shape and so expedite the work. As has been American experience a rectangular shaft is found saving of labor and economical of space and to be recommended where no great pressures have to be withstood.

A trip to the pumphouse in the lowest level of the mine was made in a cage deftly lined inside with brattice cloth so as to protect the clothes of the visitors. Having descended the 2,400 ft. the institute members left the cage and crawled through a manhole to see the pumphoom. The manhole was constructed so that it could be closed with a cover like that used for a similar purpose in a boiler. It is intended to resist the pressure of a head of water of over 100 ft. The water enters the pumphoom through a pipe and can be shut off with a valve. With the manhole cover in place and the valve closed the water can rise in the mine shaft till it reaches the next level 100 ft. above and no water will enter the pumphoom. Should the pumps fail of their office it will be possible to close the approaches to the pumphoom and repair the pumps unless the delay in making repairs is so long that water invades the level above. To provide for that eventuality, a "raise" or blind shaft reaching from the pumphoom to the next level furnishes a way of escape.

The water is raised 2,400 ft. in a single lift by two Prescott horizontal duplex plunger pumps. They each have a capacity of 500 gal. per min. and are driven by 400-hp. three-phase 60-cycle motors. It is the deepest direct-lift pumping installation in the world. The pumps at present operate only about three hours in every day as the most prolific source of water is the shaft and that is sealed off satisfactorily. The Athens mine will be mined from the bottom up instead of from the top down. The more remote ore will be removed first. When the shaft was being driven no drifting was being done. It is expected that a material saving in timber will result from a reversal of the usual method of operation. The shaft does not go down in the ore but in the footwall of the deposit.

At Negaunee a visit also was made to a bath or "dry" house. After leaving the mine the miners take showers and hang their clothes in long lines on A-shaped racks. Within these racks are radiators which speedily dry out the clothes. The men keep their home apparel in lockers which are placed against the walls of the dry house.

#### Wholesalers Protest Withdrawal of Ships From Coal Trade

**W**ITHDRAWAL by the Shipping Board of all vessels from coal traffic has caused so much difficulty to the coal trade that the Wholesale Coal Trade Association of New York, though its secretary, Charles S. Allen, has arranged a meeting of those interested in the subject, with a view to perfecting plans to make proper representations that will result in rescinding the order.

This situation is aggravated by the action of another branch of the Government proposing to lay additional penalties for delay to coal at tidewater, so that while one department refuses to supply the means for moving coal another places a penalty for delay.

Discussion of the subject, Mr. Allen announced, would take place at the Whitehall Club, 17 Battery Place, New York City, Friday, Sept. 3, at 3 p.m.



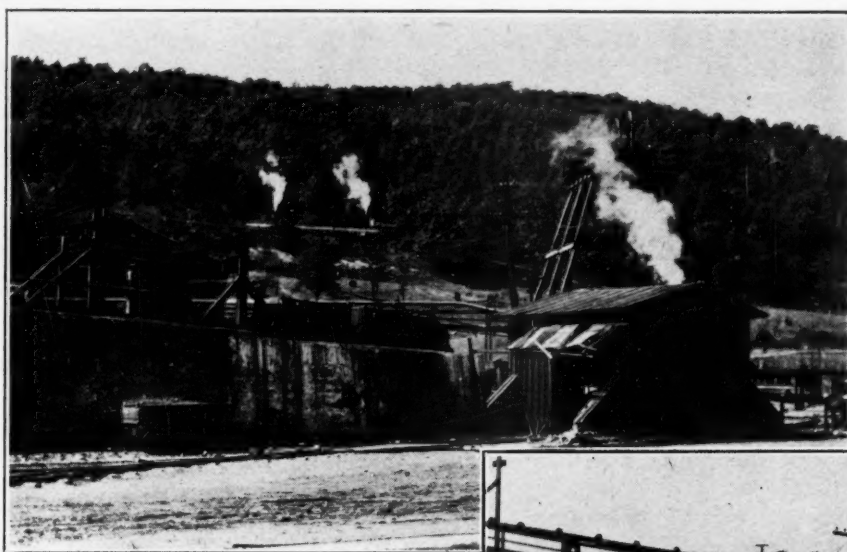
# After Quarter Century Simple Chain Haul Is Still Doing Efficient Work

At the Maltby Colliery the Work of Decaging Loads, Caging Empties and Transferring Both Over One Thousand Feet Is Performed by Three Men and a Chain Haul — No Device Has Been Found That Could Supplant the Chain Haul with Profit

By D. C. ASHMEAD,  
Wilkes-Barre, Pa.

**B**ECAUSE a system of mining or haulage is highly modern it does not necessarily follow that it is also highly efficient. Certain conditions may exist under which it may be as advantageous to use old apparatus as to employ any known modern type. In

At the Maltby Colliery of the Lehigh Valley Coal Co. a condition similar to that outlined in the first paragraph exists. At this colliery a chain haulage system transfers the mine cars from a shaft to the breaker through a distance of about 1,000 ft. The cars are

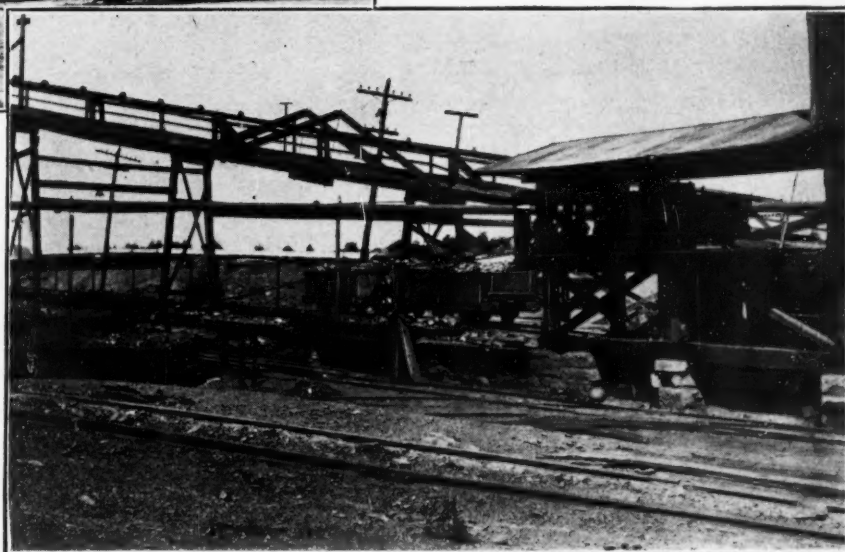


Car on Its Way to Breaker

The chain has just been placed in the grip on the car. In the background may be seen empties which, having been released from the chain, are proceeding on their way to the shaft.

## Loads Approach the Chain Haul

The counterbalanced tension carriage of this tail sheave can be plainly seen. Before reaching this sheave the chain passes over guide pulleys raising it high enough to disengage it from the forks on the cars.



such an instance it would be the height of folly to discard the old equipment to substitute new.

Sometimes it is advisable to scrap a piece of ancient but perfectly good equipment and install a new and more modern device, even though no saving whatsoever is made in unit cost. Such a procedure would be justified by either an increase in output or by greater reliability. If some such advantage cannot be gained, however, the displacement of the old equipment merely on account of its age is bad engineering.

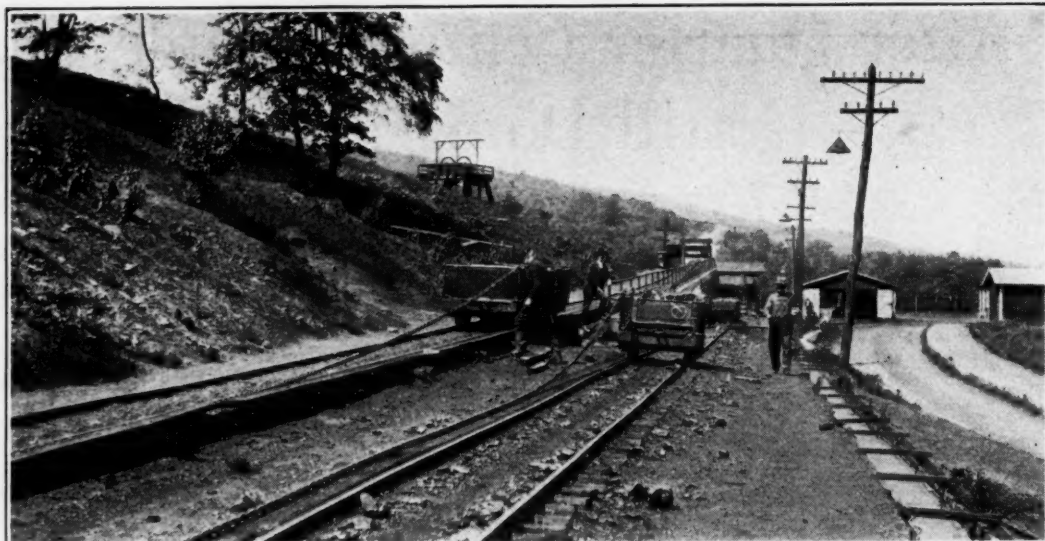
raised from the mine to the surface on cages and after discharge therefrom run slightly downgrade to a kickback a distance of 70 ft. from the shaft. From the kickback they proceed by gravity 180 ft. to the chain haulage system.

## OVER-CHAIN HAULAGE TRANSFERS COAL CARS

This haulage is of the over-chain type and when the cars come to the haul a man lifts the chain into a hook on the top of the mine car. When attached to the chain

### Tramway at Maltby Colliery

A fork on each car engages a link on the chain, the link being dropped edgewise into place. At either end of the haul the link is lifted out of this fork as the chain rises to the bull wheel, tail sheave or guide pulley.



by this means the cars are drawn to the opposite end of the haulage road, where the chain is automatically disengaged from the hook by simply lifting it a sufficient height so that it will not engage with the hook. From the end of the chain haul the cars gravitate to the foot of the car haul, which lifts them into the breaker.

When the cars have been emptied and returned they are attached to the chain haul by hand and drawn back to the shaft end of the system. As the cars approach the shaft they are taken up a slight grade. Here, again, the chain is raised to a sufficient height to release its engagement with the hook. By the time this occurs the cars are at a sufficient height above the shaft so that they move by gravity to the point from which they may be loaded upon the cage.

#### HAUL HAS A CAPACITY OF 800 CARS A DAY

This chain haul is given by a vertical steam engine and the man who engages the chain from the hook on the loaded cars also acts as engine driver. The capacity of this haul is 800 cars per eight-hour day. These cars hold 79 cu.ft. each.

The chain itself is made of  $\frac{5}{8}$ -in. iron with links 4 in. long and  $2\frac{1}{2}$  in. wide. The manufacturer is required to furnish the coal company a test bar from each 500 ft. of chain. These bars must be selected at random. The material used in making the chain is Norway iron and must have a minimum tensile strength of 48,000 lb. per square inch and a maximum strength of 52,000 lb., while the elongation of an 8-in. test piece must be less than 30 per cent. The elastic limit must be 50 per cent of the breaking strength. The chain is hand-welded.

In actual use only two men are required to operate this haulage system, one upon either end. Because of the manner in which the cars are delivered to the shaft, however, a third man is required at this point to properly place them upon the cages.

#### COURT HOUSE WHERE SHADY CARS ARE TRIED

This haulage system has been in operation for the last twenty-five years, and it would seem that if any other method could be found to do the work cheaper it would have been installed. The Lehigh Valley Coal Co. has considered numerous other means of moving its mine cars but is satisfied that as yet it has not found any that would do the work as cheaply as it is accomplished by the present method. Other means have been proposed that would do it at equal cost, but the expense of

the new installation and the loss arising from the scrapping of the old equipment would more than counterbalance any savings that might be made in operation.

Because this system of haulage is as cheap as any yet proposed, it does not signify that the universal introduction of this type of transportation is advocated. The important point to be considered is that before any change in methods of mining or haulage is made, a careful investigation should be undertaken, and all advantages and disadvantages carefully considered.

### Coal Miner Completes Forty-Year Record Of Faithful Work

MICHAEL HANAHUE, of 91 Elizabeth St., Pittston, Pa., has mined coal at one shaft continuously for more than forty years. It is estimated that this man has worked an average of six hours loading an average of four tons of coal per day for 200 working days during each year of this time. The coal loaded is thus  $200 \times 4 \times 40 = 32,000$  tons. This would fill 640 railroad cars of 50 tons each. The total number of hours worked inside the mine would be  $200 \times 6 \times 40 = 48,000$  hours.

He has resided in the same dwelling house during all this period. This is situated about one mile from the shaft. He says that he has never ridden to or from the mine during the entire forty years. This shows that he has walked  $200 \times 2 \times 40 = 16,000$  miles or two-thirds of the distance around the world, in going to and from the mine alone.

The coal company that employed this man would be glad to know if any *Coal Age* reader has a better producer than old Michael.

We are glad to say that this man was retired on a pension in 1918.

### New York Wholesalers to Combat Excessive Freight Increases

MANY of the new freight rates on coal show increases which it is believed are in excess of those authorized by the Interstate Commerce Commission, the excuse offered being that they are made to maintain the proper differential between the producing fields. The Wholesale Coal Trade Association of New York has initiated an investigation of the matter and purposes taking it up with the commission.



# Miniature Mine Locomotive, Weighing Under A Ton, Gathers Coal from Low Places

Room Tracks Are Usually Poorly Laid—This Locomotive, Lighter Than a Mine Car, Can Travel Over Such Tracks and if Derailed Is Easily Replaced—Slightly Over Two Feet High, It Pulls as Much as Four Mules

BY DONALD J. BAKER  
Wilkesburg, Pa.

**W**EIGHING only 1,800 lb., and standing just 26-in. high, an electric mine locomotive is being constructed to supplant animal haulage in thick bed mines. It is termed the "mechanical mule." Though designed for thick coal its low construction makes it suitable for thin seams and for working in places into which animals cannot be taken. In such low coal the locomotive will undoubtedly find a wide field of application. The practice has heretofore been for the miners to push their cars by hand from the working face to the room neck, where they formed into trips for transportation by locomotives of standard design.

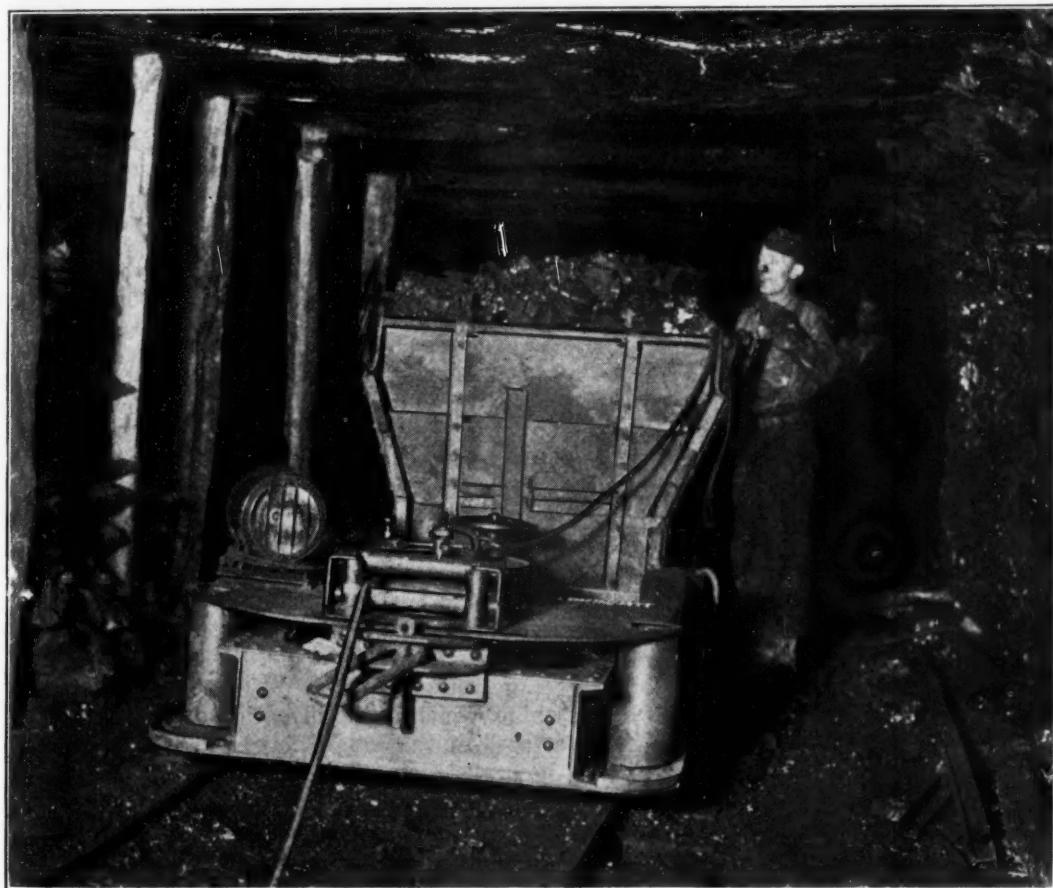
Conclusive evidence that the application of electricity to underground transportation has not yet reached a stage that would warrant its supplanting mules and horses is furnished by the 1919 Report of the State Department of Mines of the Bituminous Coal Districts of Pennsylvania. This report states that thousands of animals were used in these regions alone. The main reason for such a wide use of animal haulage in these days of time-, labor- and money-saving machines is readily apparent. Heretofore it has been impossible to

use heavy tractor equipment on roadways constructed of light material and hastily laid.

## MINER LAYS IRREGULAR TRACK IN HIS ROOM

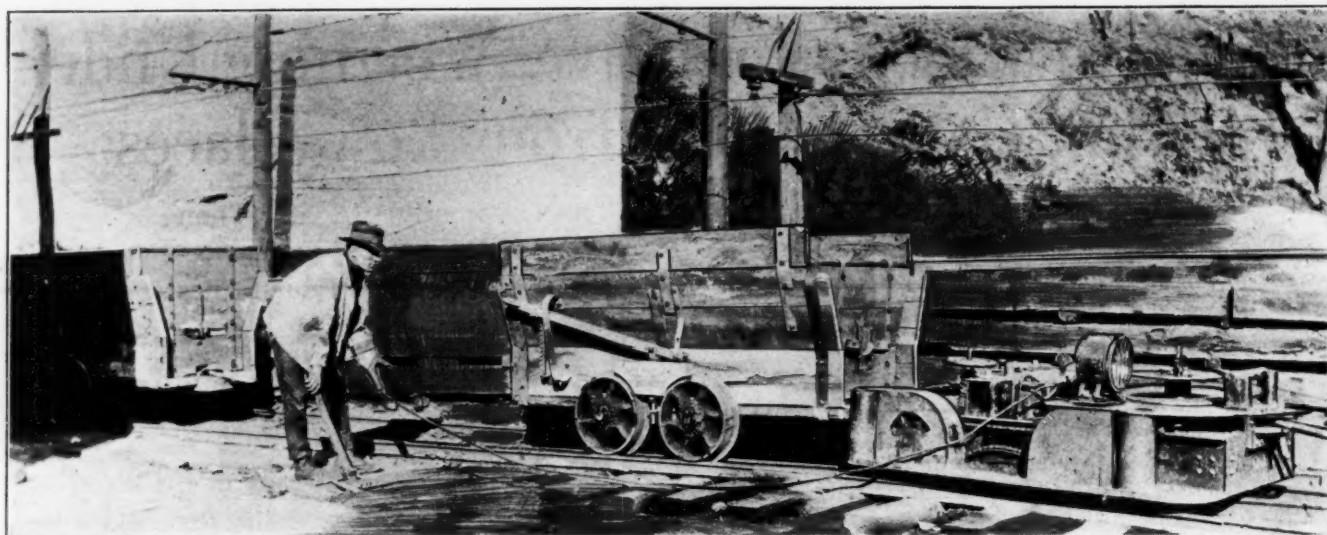
Most miners are paid for extending the tracks within their working places at a contract rate. This work, which is seldom accomplished by men skilled in the art of track laying, is frequently done without the aid of adequate tools. As a result the track is by no means well laid. In putting the equipment into place the miner aims to turn out only a job of such perfection as will permit him to move his loaded cars from the face with a minimum number of derailments.

There are several reasons why it is now common practice to employ nothing but the lightest of track material in the actively working areas of a mine. Not only is the first cost of such equipment lower but, by reason of its lightness, the miner can handle it with greater dispatch than he can heavier material. Another factor that dictates the use of light track material within the rooms is that the men who lay it—the miners themselves—being quite inexperienced, are unable to com-



## "Mechanical Mule" Pulling Loaded Mine Car

The control cable has been attached to the side of the loaded car and is being operated by the man on the right. The cable in the foreground of the illustration is delivering current to the machine from the trolley wire on the room heading.



"DRIVER" MAY RUN AHEAD AND THROW A SWITCH AND STILL HAVE HIS LOCOMOTIVE UNDER ENTIRE CONTROL

This remote-control feature makes the locomotive obey the master's will just as the mule at a distance will—sometimes—obey his master's voice. The title "mechanical mule" seems badly chosen, because this draft animal reaches up only a little above the bumpers. It is lower than the lowest of cars and can travel up a bad track without injury to either itself or the roadway.

plete a job with the degree of finesse to be desired. It is impossible to operate heavy locomotives with any degree of efficiency over tracks that will barely support a single loaded mine car. Consequently in the past the miners have pushed and the mules have pulled the cars to conveniently located sidings where they might be available to locomotives operating on heavier track equipment.

#### LIGHT-WEIGHT LOCOMOTIVE FOR LIGHT TRACK

The mechanical mule, with a weight less than that of the smallest loaded mine car, has been devised to operate on poorly-laid track. The principle of operation involved is simple: A locomotive that weighs less than a loaded mine car can certainly traverse any roadway—no matter how poorly constructed—that the car itself is able to travel over.

The normal tractive effort of the machine is three times that of the average mule. This effort may be increased from 50 to 70 per cent when necessary. By means of a wheel control on the rear end of the machine the drawbar of a loaded mine car may be elevated so as to allow the bumper of the car to rest on the rear end of the locomotive. This transfers some of the weight of the mine car to the mechanical mule. In this manner the machine is made to hug the rails closer and consequently is in a position to furnish greater tractive effort than would be possible if the weight of the machine itself alone were utilized.

#### CAN BE CONTROLLED AT DISTANCE OF 30 FT.

The locomotive is operated by a magnetic blow-out type of controller. Push buttons at the end of a 30-ft. length of cable permit the machine to be operated from that distance—that is, without the driver being seated on the frame. This appears to be an advantageous type of construction, as the machine may be controlled in extremely low passageways.

The brake may be operated either electrically or manually, depending upon how the machine itself is driven. This is automatically accomplished by the push-button control. When the locomotive is in operation the brake is off, but as soon as power is released from the driving mechanism the brake is set.

The remote-control and automatically-operated brake features that have been incorporated in the design allow the machine to be handled in much the same way as an ordinary mule. It is thus possible for the operator to leave his machine for such purposes as throwing switches, coupling cars, spragging wheels, setting brakes, opening and closing trap doors, etc., while still maintaining control of the locomotive.

The advantages of the mechanical over the ordinary mule are many. First, by reason of the diminutive height of the machine, it may be used in low-bed mines without taking down top, as is often necessary to make clearance for live stock. Second, the machine consumes energy only when performing work. Third, it will not only pull cars but will push them as well and hold them in position on grades without the car brakes being set or sprags applied. Fourth, this locomotive will start operation immediately upon pressing the control button, whereas the average mule after it has been commanded to start will take from six to twenty seconds in squaring itself away to make a move. In connection with this feature it can be seen that balking has been eliminated.

#### MECHANICAL MULE DOES FOUR ANIMALS' WORK

Lastly, the tractive effort of the average mule is about 200 lb. A good day's work for such an animal would be represented by the hauling of two mine cars, each containing two tons of coal, for a distance of fifteen miles on a level track or thirty coal-car miles. The draw-bar pull of the mechanical mule when attached to a car holding two tons of coal may be made approximately 800 lb. A day's work might be represented by the hauling of two cars of coal for a distance of 67½ miles over the same track, or 135 coal-car miles. Contrasting these two figures of operation it can be seen that the mechanical mule has about four times the work capacity of the average animal.

The machine, which is the invention of J. F. Joy and is manufactured by the Joy Machine Co., of Pittsburgh, Pa., may be operated in more restricted space than an ordinary mule and because of its extreme lightness in weight it may be placed upon the track when derailed with less effort than that expended in replacing an average mine car.



# Coal Quality—A Factor in Export Trade\*

Such American Coals as Are Most Readily Available for Export Are the Best Fuels that the Country Produces—If Exports Are To Be Fostered Steps Must Be Taken to Assure the Purchaser of the Quality of the Fuel He Buys

By J. D. DAVIS†  
Pittsburgh, Pa.

**O**F AMERICAN coal those in the Central and Appalachian regions are readily available for export. In these regions are mined the best of all types of coal from bituminous to anthracite. The accompanying map<sup>1</sup> shows these regions as well as the ports from which the coals are likely to be shipped.

Referring to the map, fuels mined in West Virginia and indicated by the numeral 1 are known as New River and Pocahontas coals. These are quite similar to the English Cardiff coal and rank high as steaming fuels.

From proximate analyses and the use of the calorimeter the chemical properties of delivered New River and Pocahontas coals have been determined to be as follows:

	Per Cent	
	Maximum	Minimum
Moisture.....	2.5	1.5
Ash.....	8.0	3.5
Volatile Matter.....	21.0	17.0
Sulphur.....	1.0	0.5
Heating value (B.t.u.).....	15,102	14,508

These coals are rather soft and friable, and for this reason they do not stand shipment well; nevertheless with the proper stoker equipment or proper facilities for hand-firing they give excellent results and possess the added advantage of being almost smokeless. They are largely used by the United States Navy for bunkering purposes and can be employed in the manufacture of an excellent metallurgical coke. The softening temperature of the ash from coals from these fields is approximately 2,410 deg. F. for the Pocahontas, and 2,550 to 2,800 deg. F. for the New River coals.<sup>2</sup>

\*Published by permission of the director, Bureau of Mines.

†Chemist, Bureau of Mines Experimental Station.

<sup>1</sup>Manning, Van H., "United States Coals Available for Export Trade": Bulletin 76, Bureau of Mines, 1916.

<sup>2</sup>Selvig, W. A., "Fusibility of West Virginia Coal Ash," *Coal Age*, Vol. 15, No. 1, page 12.

## Coal Fields and Ports

A map of the fields having coal available for transmarine export, showing the ports to which the fields are normally tributary. The areas are divided according to the quality of coal produced and the ports to which it goes rather than according to geological considerations of field continuity. The best coals are those which lie readily convenient to the Atlantic Coast and to the great centers of our population.



## LIMITS IN ANALYSIS AND ASH-SOFTENING TEMPERATURES OF COALS FROM VARIOUS EUROPEAN PRODUCTION AREAS

District or Region	Moisture, Per Cent		Ash, Per Cent		Volatile Matter, Per Cent		Heating Value, B.t.u.		Temp. of Ash, Softening,	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Max. Deg. F.	Min. Deg. F.
German Westphalia, (Sarre).....	13.7	1.6	17.7	4.2	42.9	30.8	13,300	11,000	3,060	2,430
German Westphalia (Ruhr).....	10.0	1.0	12.8	4.4	35.4	14.1	14,000	11,850	3,060	2,280
English Coal (Chiefly Cardiff)....	9.0*	0.7	8.8	4.5	37.8*	12.4	14,400	12,150*	3,110	2,460
French Coals.....	7.5	1.0	19.6	11.2	35.6	16.9	.....	.....	2,910	2,460

\*Yorkshire nut, ashes soften at as low as 2,280 deg. F.

The region indicated by the numeral 2 on the map produces coal of two classes—steam and gas. The composition and heat value of the steam coals are as follows:

	Per Cent	
	Maximum	Minimum
Moisture.....	2.50	2.50
Ash.....	10.00	6.00
Volatile matter.....	20.00	19.00
Sulphur.....	1.25	1.25
Heating value (B.t.u.).....	14,670	14,000

These coals are somewhat harder than those just described and do not crumble so readily on handling. The fusibility of their ash varies rather widely, lying between the limits of 2,100 and 3,000 deg. F.

## FUEL IN REGION 2 MAKES GOOD COKE

The gas fuels from this region make excellent metallurgical coke and are largely used in this country for that purpose. The composition and heat value of this class may be given as follows:

	Per Cent	
	Maximum	Minimum
Moisture.....	2.50	2.50
Ash.....	10.00	6.00
Volatile matter.....	37.00	28.00
Sulphur.....	1.25	0.70
Heating value (B.t.u.).....	14,600	13,500

These coals are for the most part hard and have a brilliant luster. The fusibility of the ash varies from 2,370 to 2,910 deg. F.<sup>2</sup>

Coals from region 3 are of the so-called bituminous class and vary quite a little in composition. They are hard and should give little trouble from excessive degradation in handling. Their composition and heat values are as follows, by proximate analysis and calorimeter:

	Per Cent	
	Maximum	Minimum
Moisture.....	2.5	2.5
Ash.....	10.0	8.5
Volatile matter.....	37.0	34.0
Sulphur.....	0.9	0.5
Heating value (B.t.u.).....	14,580	13,680

The fusibility of ashes from these coals varies from 2,100 to 2,910 deg. F.

## COALS OF REGIONS 4 AND 5 ARE SIMILAR

Coals from region 4 are well suited for gas making and are extensively used in this country for the manufacture of metallurgical coke. The average composition and heat value may be stated as follows:

	Per Cent	
	Maximum	Minimum
Moisture.....	3.0	2.0
Ash.....	10.0	5.0
Volatile matter.....	36.0	33.0
Sulphur.....	1.1	0.8
Heating value (B.t.u.).....	14,360	13,590

Ashes from these coals fuse between limits of 2,140 and 2,860 deg. F.<sup>3</sup>

Coals of region 5 are quite similar to those of region 4, while those from region 6 are of a later formation,

<sup>2</sup>Selvig, W. A., and Fieldner, A. C., "Fusibility of Ash from Pennsylvania Coals," *Coal Age*, Vol. 15, No. 25, p. 1086.  
<sup>3</sup>Selvig, W. A., Brown, O. C., and Fieldner, A. C., "Fusibility of Coal Ash from Eastern Coals."

somewhat higher in volatile matter and moisture and lower in heating value. They are used mostly for domestic purposes and steam production.

## RUSSIA'S RESOURCES MEAGERLY DEVELOPED

The most important European coal regions include the Westphalian areas in Germany, the Welsh fields in Britain and the Pas de Calais district in France. The coal deposits of Holland and Belgium may be considered as an extension of the latter fields. The beds in both Belgium and Holland are thin and much broken by faults, making mining difficult and expensive. In neither country is the output sufficient for home consumption although both export some fuel. The Upper Silesian field is important in that the coal is easily mined and the beds are thick (as much as 60 ft. in some cases), but the coal is of rather low grade and lignitic in character. The same may be said of the coal districts of Austria-Hungary. There is quite a little coal in Russia, but as yet the development of that country's resources has been small. At the top of the page will be found some analyses<sup>4</sup> of coals actually exported from the fields just mentioned.

The following may be given as fairly representative of the quality of the best coals of the fields referred to above:

District or Region	Moisture, Per Cent	Ash, Per Cent	Volatile Matter, Per Cent	Heating Value, B.t.u.
Sarre Fat Coals.....	1.7	5.1	36.9	13,850
Ruhr Steam Coals.....	4.2	6.0	17.2	13,500
English Cardiff.....	1.0	7.0	15.0	14,050
French Coals (Steam).....	5.4	11.5	26.9	12,140

## COAL COST AT MINE LOWER IN THIS COUNTRY

Although labor is cheaper in Europe than in America, the cost of coal at the mine is normally less in this country. This is brought about by the fact that mining operations are generally more difficult in Europe because of deeper workings, faulted beds, gaseous conditions and quicksands; furthermore there are the legal requirements in Europe that the thin beds as well as the thick ones must be worked.<sup>5</sup> In this country as a rule only the thicker and more easily workable beds are mined. The comparative cost of coal (before the war) at the mine in England, Germany and the United States may be given as follows:

	Per Metric Ton
United States.....	\$1.00 to \$1.50
England.....	2.00 to 3.00
Germany.....	1.60 to 2.25

The comparative cost at port, f.o.b. ship, of coals of the three countries was normally about as follows:

	Per Metric Ton
United States.....	\$2.85 to \$3.47
England.....	3.05 to 5.40
Germany.....	3.00 to 4.80

<sup>4</sup>Naville, G., and Hohn, E., "Quarante-Sixième rapport annuel, Société suisse de Propriétaires de chaudières à vapeur," 1914, page 58.

<sup>5</sup>Rice, George S., "Mining Costs and Selling Prices of Coal in the United States and Europe with Special Reference to Export Trade," paper presented before the Second Pan-American Congress, Washington, Dec. 27, 1915-Jan. 8, 1916.



England has the advantage of the shortest haul by rail to port and Germany has perhaps a slight advantage over the United States in that respect. However, Germany has exported largely by rail alone. Obviously the United States is under an enormous handicap as an exporter to Europe in that the freight charges by water necessarily must be considerably higher than those for European producers owing to the much longer haul. In spite of this disadvantage (and freights are undoubtedly higher now than they will be in normal times) the United States exported to Europe during the last year four or five million tons of bituminous coal, whereas before the war exports to that continent amounted to almost nothing. This was accomplished, too, with war-time prices prevailing in the United States. As a result of the war, industry in Europe has become so disorganized and war demands have made such inroads on fuel reserves that it seems probable that there will long remain a demand for American coal on that side of the water.

#### ENGLISH COAL CHEAPER BUT SCARCE

In the autumn of 1919 English coals were selling at Rotterdam, a large port of entry for American goods, at \$23 per ton, while American coals were selling simultaneously at \$29.50 per ton. This shows a decided advantage for the English coal, but there was little of this fuel on the market. At the same time American coals were selling f.o.b. Genoa at \$33 per ton.

In order to maintain our export business with Europe several things must be done. First, a highly important question must be decided. This is: Should we as Americans make an effort to establish and hold a coal-export business with Europe? Should we not, rather, discourage such export, particularly since this business will take the best of our coal out of the country? Should we not take the position that it is better to conserve our fuel resources by retaining this fuel for the upbuilding of our own industries? I believe that this latter is the proper view to take. This question aside, however, we should endeavor to bring our selling standards up to those obtaining in Europe. This should be done for our own consumers' benefit quite as much as for the reputation of American coals across the seas.

American coals have the reputation abroad of being good fuels and of not being so well prepared as competing European coals; furthermore, the purchaser has no assurance that the coal he buys from an American pool is of the quality guaranteed. This is because the pool classification is inadequate. Coals shipped to a given pool are roughly similar, but may vary appreciably in fuel value, whereas, in order to conform to European standards, accurate knowledge should be available not only as the quality of every ton sold out of a given pool but also covering the mine or mines from which it came.

#### GOVERNMENT INSPECTION NOT EXPENSIVE

This may be brought about most effectively and with the least expense by frequent government inspection and analysis of coal as it is loaded at the mine. Every dealer would then be able by certifying the mine to assure the purchaser that the coal he has for sale is of a certain quality, for every consumer, be he European or American, would then have only to look up the coal in a government inspection report in order to secure a clear idea of the quality of the fuel. The expense of such government inspection would not be so great as

might at first appear. The knowledge acquired would prove to be of great benefit, particularly to the small consumer. The large consumer long ago found that it pays to inspect and analyze the coal he buys, and regularly maintains a corps of inspectors and a laboratory for that purpose.

#### NEED LOW FREIGHTS TO HOLD EUROPEAN TRADE

Such a system of inspection will naturally bring about better preparation of coal through the medium of competition; furthermore, it will discourage the wasteful consumption of coals for purposes to which they are ill-suited. For example, in the past enormous quantities of good byproduct coal have been used for making steam and for domestic heating, when much better fuel for the purpose could have been obtained. Government inspection should make it at once evident what sort of fuel to use for a given purpose and where most readily to obtain it with the assurance that it is actually of the quality desired.

In order to hold an export coal business with Europe freight rates must be brought considerably lower than they are now; even with the advantage of somewhat better grades of coal, cheaper mining conditions and greater resources we will hardly be able to compete unless return imports from Europe can be made to bear a considerable portion of the freight charges. Just now imports are not of sufficient importance to bring this about.

The European demand for American goods has kept the balance of trade on this side. It is conceivable that conditions will change in the future, so that the trade will be more evenly balanced. Just now all kinds of American goods find sale in Europe regardless of high cost and high freight rates. This is the case with coal: Europe has not, under existing conditions a sufficient coal supply and must needs look to America for fuel even if the price is high.

#### Omaha Chamber of Commerce Assails Reconsignment Order

THE Interstate Commerce Commission's reconsignment order is assailed in a formal complaint filed by the Omaha Chamber of Commerce against the principal Western carriers. It asks that the Interstate Commerce Commission investigate the practice of reconsignment of coal and coke west of the Mississippi River and require the defendant carriers to withdraw their reconsignment rules applying to open-top cars. It also asks that reparation be made for damages occasioned by the order permitting only one reconsignment. It is alleged that there has been no undue delay or holding west of the river of cars awaiting reconsignment.

It is stated that irreparable damage will be suffered by wholesalers, retailers and consumers if the reconsignment rule is allowed to remain effective, and that there will be greater delay to equipment under the new rules than would be the case if the ordinary procedure were followed. The order is declared to be contrary to sound economic policy, and immediate relief at the hands of the commission is asked.

The American Wholesale Coal Association has announced its intention to intervene in the case and it is expected that the National Coal Association will take similar steps.

# How Electrical Apparatus Was Restored After Being Deeply Submerged

A Mine Flood Covered the Locomotives of the Sayre Colliery Under a Head of About 30 Ft.—Apparatus Thus Drowned Was Dried in a Temporary Oven and Put Back Into Service, Saving Both Time and Money

BY E. J. GEALY  
Kingston, Pa.

**D**URING the flood season, last spring, few were the anthracite-coal mines that did not suffer from water. A mine that did not have some section of its workings shut down because of flooding was extremely fortunate. The few that were thus favored enjoyed this condition not because they had no water but because they were able to take care of the sudden increase in influx.

One cause for so many mines suffering during the last flood season was the lack of pumping capacity and materials which resulted from the war and the impossibility of getting early shipments. The coal industry, like many others, has found it hard to obtain material ever since the war began. Pump repairs, castings, packing, piping and all other material necessary for pump maintenance were lacking.

## ELECTRICAL PARTS DEEPLY SUBMERGED

When spring came the stage seemed to be all set for flooding. The ground was loose and porous, many caves were wide open, the rain and thaw came suddenly and with full force, and little warning was given.

Sayre Colliery is situated on the side of a mountain in Northumberland County, near Mt. Carmel, Pa., and is owned by the Lehigh Valley Coal Co. The location of the coal in this territory is such that the mine is at the foot of a large watershed.

In about two days Sayre, one of the finest collieries in the whole region so far as upkeep, maintenance and picturesqueness are concerned, was "drowned-out." The water rose in the shaft 30 ft., flooding the mine together with all its equipment, pumps included. At this height the pumps, aided by bailing buckets, battled with the water for three days without any gain being made.

At the end of about seven days the water had been lowered sufficiently to make a portion of the electrical apparatus accessible. Some of the first equipment to be brought out were the motor casings, armature, field coils and controllers of the Westinghouse and Jeffrey trolley locomotives that were a part of the equipment of the colliery.

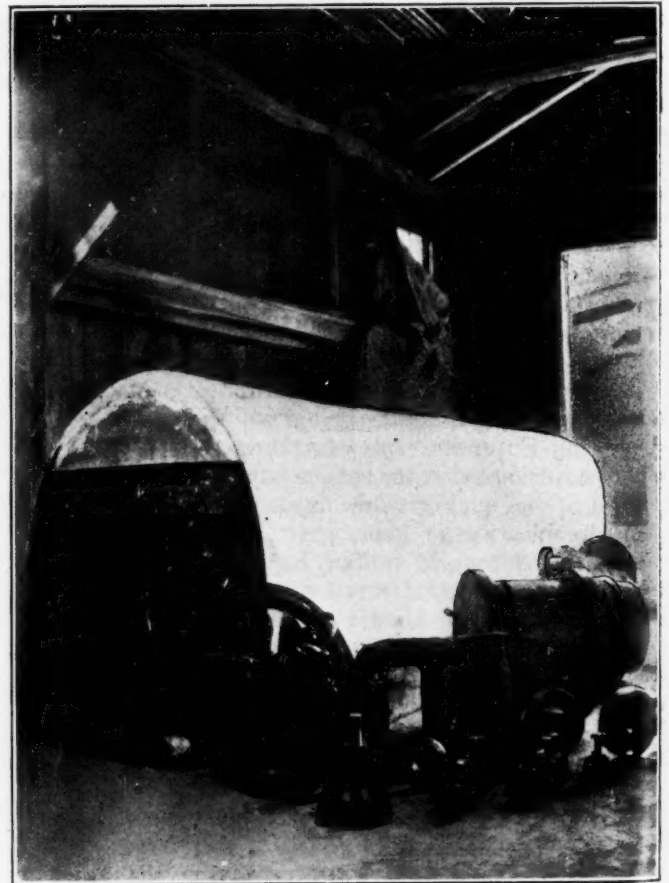
## HEAVY FLOOD MADE VENTURE UNCERTAIN

While the water was being lowered a drying oven was improvised outside the mine near the boiler house, for the purpose of drying out the rescued equipment. Considering that the flood had risen till the various pieces of apparatus were under a heavy water pressure much doubt was entertained as to the possible success of the drying-out venture.

The oven was made by placing on a concrete floor six 2½-in. iron pipes, about 14 ft. long, side by side and about 2 in. apart, joining them all together and connecting the unit thus formed to the boiler plant, which fur-

nished steam at about 120 lb. pressure. Over the pipes a platform was built and over all was arched a long piece of No. 8 gage sheet iron. This light metal arch was then covered with a 1-in. coating of asbestos, and all crevices were filled. On one end of the oven was fastened a permanent back of wood which also was plastered over with asbestos. On the other end was placed a large wooden door. In the accompanying illustration is shown the completed oven and some of the motor parts.

All electrical material when brought out of the mines was found to be covered with a muddy deposit. This was first thoroughly wiped off. Next the equipment was taken apart piece by piece—armatures, field coils, brush rigging, bearings, etc. The all-metal parts were cleaned, oiled and set aside, while those portions included in the make-up of the electrical circuit were placed in the oven.



OVEN FOR DRYING ELECTRICAL APPARATUS

On a concrete floor were laid six 2½-in. iron pipes 14 ft. long in which passed steam at 120 lb. pressure. Over the pipes a platform was built which was arched with a long piece of sheet iron which in turn was coated with asbestos. A wooden back and door completed the oven. From the electrical parts placed in this oven the water, despite its penetration, was completely removed.



After the oven was completely sealed the steam was turned on and the temperature gradually raised and watched through holes by means of thermometers suspended inside the oven. Finally the temperature was brought to about 225 deg. F. After baking the desistance of the coils and armatures was tested by means of a voltmeter. If any short-circuits or grounds were located, that particular piece of apparatus was put back into the oven and retreated.

The locomotive armatures were the most tedious pieces to dry out, because of their construction and of the extreme necessity that the job be efficiently done. Some idea of the effect the pressure of the water had upon them can be gained from the fact that about one-half pint of water was taken out of the commutator shell of one armature. The only way this water could have worked its way in was by forcing itself through the mica insulation of the "V" rings of the computer. Another armature was so completely soaked that it took between seventy-five and eighty hours of continuous heat application to dry it out.

#### VOLUME OF WATER NULLIFIED ACIDS EFFECT

It might be interesting to note that little or no damage appeared to be done by the acid which mine water nearly always contains. This may be because the great volume of surface water thoroughly diluted whatever acid the mine water may have contained, and furthermore that the mean temperature of the water was about 45 deg. F.

Due to this method of carefully drying, all the electrical equipment was saved. In the list of apparatus treated were Jeffrey type 74 and 85 armatures, Westinghouse type 75 armatures, field coils, fan motors, track drills and controllers. All of these were again put into operation within eleven days from the time the first motor was brought out to be reconditioned. Several months have now passed, and not one of the armatures or field coils has failed.

The amount of the saving thus made cannot be calculated. Some idea of the achievement can be gained, however, from the fact that there were in all three locomotives caught in the flood none of which could be replaced for less than \$5,000, and then because of slow deliveries only after about a three months' wait. This figure alone more than warranted the experiment, to say nothing of the loss in output in tons of coal which would have resulted if new locomotives had been purchased, or even if the equipment reclaimed had been rewound and reinsulated.

### Wholesale Investigation of Profiteering Charges in Eastern Kentucky

**B**ETWEEN 500 and 1,000 subpoenas for coal operators in eastern Kentucky, according to a dispatch from Covington, Ky., Friday, Aug. 27, were being sent out that day by U. S. Attorney Thomas B. Slattery. The coal men were to be called Aug. 30 before the special Federal Grand Jury which is investigating complaints of alleged coal profiteering. The operators, it was stated, were ordered to bring their books and various records to the investigating body for perusal. U. S. Marshal Henry M. Cox and twelve deputies were serving papers on operators near Barbourville, Pineville, Middlesboro, Harlan, Hazard and McRoberts.

## Drill to Lighten Work of Boring Coal, Slate and Shale

**Bores a Two-Inch Hole Six Feet in Four Minutes in Hardest Anthracite — Anthracite Drill Weighs Forty Pounds, Soft-Coal Drill, Thirty Two**

**A**NTHRACITE mining is a matter of drilling, charging, shooting and loading, the operation of drilling sharing with loading the onus of being the hardest part of the work. Anything that will lessen the laboriousness of this part of the operation will make the work of the laborer lighter and more pleasant and do much to keep him steadily on the job.

In the accompanying illustration is shown a one-man drill attached to the end of a feed bar. It is designed for the drilling of anthracite, slate, shale and other comparatively soft materials. For drilling bituminous coal it is as a rule not necessary to use the driving bar and the feed-bar attachment. Where the height of the bed varies a modification of this machine can be used, one that is built for mounting on an upright post or column.

It is not practical at all times to use an upright post. In some parts of the mines the height may be 4 ft. and in other parts 8 ft., so that by using the standard, or driving, bar and the feed-bar attachment the operator is enabled to drill holes in any part of the face and at any angle. This particular type of machine, which is known as Model O. M. of the Spry one-man electric drill and is manufactured by the Howells Mining Drill Co., of Plymouth, Pa., weighs about 40 lb. and can be operated successfully by one man.

A machine lighter than this is made for bituminous mines. This weighs approximately 32 lb. and is used in the same manner as a breast drill with one long auger. Both machines are manufactured for either direct or alternating current and are wound for any voltage.

After five years of experimental work it has been



DRILL FOR COAL, SLATE AND SHALE

Fortunately much of the material within the mines can be drilled by a machine so light that it can be operated without a drill post. A 32-lb. outfit is heavy enough to meet the needs when drilling bituminous coal.

possible to produce a machine that will stand up under the most strenuous conditions. The motors are light and compact and require little care. The back gears run in thick oil or grease, so that the wear is small. The machine is equipped with a fan attachment that keeps the motor cool.

In view of the scarcity of labor it is believed that the Spry one-man drill will supply a long-felt need. It requires only about 1 h.p. to operate either model, and the cost of upkeep is nominal. Such machines will drill in four minutes a 2-in. hole 6 ft. deep in the hardest kind of anthracite. This time includes that consumed in the changing of augers.

Augers can be supplied with or without detachable cutters. An auger with an inserted tool-steel cutter has been developed. When the cutting edges become

dull, the miner can remove the small cutters and carry them from the mine in his pocket.

The same company manufactures a larger electric coal and rock drill. This machine has a rating of from 3 to 4 h.p. and is made for either alternating or direct current. These heavier-type machines are all mounted on columns or crossbars and are capable of drilling anything that a steel auger will penetrate. Where the material is quite hard, the machines are equipped with a back- or compound-gear attachment. The larger drills have been on the market for the last twelve years and are being shipped to every country in the world. Aside from its electric machines this firm also manufactures a compressed-air drill, as well as forty-two different types of hand-boring machines for rock and coal.

## A Puzzle in the Oxidation of Coal

Coal Residue Mixed with Its Pyridine Extract and the Same Coal in Natural State Oxidize More Readily Than Either Coal Residue or Pyridine Extract

M. GODCHOT in the *Comptes-rendus de l'Académie des Sciences* says that a sample of coal which he tested showed the following composition: Volatile matter, 37.4 per cent; fixed carbon, 58.6 per cent; ash 4 per cent. Excluding ash, the chemical composition was as follows: Carbon, 83.59 per cent; hydrogen, 5.78 per cent; oxygen plus nitrogen, 10.67 per cent. When left in a heated container regulated to 212 deg. F., the coal gradually oxidized and after a month of this treatment the increase in weight was 3.15 per cent.

When treated with boiling pyridine by Wahl's method the original coal gave an extract in the form of a brown amorphous powder, 100 grams of coal giving 22.63 grams of extract which on analysis had the following composition: Carbon, 83.45 per cent; hydrogen, 5.84 per cent; oxygen plus nitrogen, 10.51 per cent. The coal after the extract was removed no longer caked but by adding the "extract" so as to reconstitute the original coal, the latter when heated gave an agglomerate coke equal to that obtained from the natural coal.

M. Godchot also took a quantity of coal from which the "extract" had been removed and some of the extract itself and left them for a month in a heated container kept constantly at 212 deg. F. At the end of this period the coal minus the extract—the coal residue—had increased in weight 1.99 per cent, while the extract had gained in weight 1.22 per cent.

The same test was made on coal reconstituted by mixing the coal residue with its own extract in suitable proportions. The gain in weight after heating for a month in a container heated to 212 deg. F. was 3.20 per cent, which is more than either the residue or the extract had gained under like treatment. The three oxidized products, derived respectively from reconstituted coal, coal residue, and coal extract, colored brown in the presence of potassium.

In conclusion M. Godchot says that it is difficult to believe that the phenomenon of oxidation arises from the action of bacteria in the coal, for if such existed the pyridine, being an antiseptic, would destroy them. Probably the pyridine splits up the coal into two parts, both of them oxidizable separately but not in equal degree. When the parts are joined together in the

natural coal or in the coal as reconstituted by mixing the residue and extract together in their proper proportions one of the parts may act as a conveyor of oxygen to the other, for the natural and the reconstituted coal oxidize more rapidly and in greater proportion than either of the two parts taken separately. To show this clearly the following gains in percentage may be repeated: Natural coal, 3.15 per cent; reconstituted coal, 3.20 per cent; coal residue, 1.99 per cent; coal extract, 1.22 per cent.

## Navy Begins Intensive Development of Alaska Coal Fields

UNDER the immediate direction of Commander Otto C. Dowling the navy has begun intensive development of the Chickaloon coal field in Alaska. An appropriation of \$1,000,000 is available for the work. Commander Dowling has requested that the department furnish him with a geologist and twenty-five experienced miners with which to augment his present force. He also has ordered additional machinery.

An administration building, a large bunk house, a dispensary, a mine-rescue house and cottages for miners who are married are being constructed in connection with the navy's development work. In addition to securing supplies of coal from the Matanuska field the navy also expects to get some coal from the Eska mine, where a washing plant is being constructed.

Commander P. W. Foote is in immediate charge of the Washington end of the work. He expects to see private interests open coal properties in the vicinity of the navy mine.

An important feature of the Alaskan work will be the installation of facilities at either Anchorage or Seward for handling coal at ship-side. No decision has been reached as to which place will be chosen for the erection of coal-handling facilities. Anchorage is only seventy-five miles from the Chickaloon mine but there is trouble with ice from November until April. Seward is 188 miles from the mine and while it is practically on the coast, a serious objection would have to be overcome because of the great depth of the harbor. It is difficult to find anchorage and wharf construction would be very expensive.

The engineering portion of the navy's coal mining operations in Alaska is being conducted by Sumner Smith, formerly mine inspector for Alaska for the Bureau of Mines.





## Discussion by Readers

Edited by  
James T. Beard

### Was the Mine Law Deficient?

**A**FTER reading the report of the sad accident caused by the explosion of gas in the Union Collieries mine, near Unity, Pa., *Coal Age*, July 29, p. 250, the thought has been impressed on my mind that every accident has its lesson.

It appears from the account given that considerable precaution was taken to avoid an accident when the company was notified by the power company, which supplied electrical power to the mine, that the electricity would be shut off from noon Saturday until over Sunday to enable necessary repairs to be made. On the receipt of this notice the men were withdrawn from the mine.

The evening of Sunday, power was again furnished the mine and the ventilating fan started. A little later, the night foreman, firebosses, timbermen and pumpmen, nine in all, entered the mine to see that the air currents were circulating properly; but the usual night force of 200 men were not permitted to enter. Just here I would ask, Was it in compliance with the law forbidding men to enter a mine for work after a brief cessation of activities and before the mine had been examined and pronounced safe?

#### EXPLOSION FOLLOWS TURNING ON THE POWER

The men had been below but a short time when the night foreman phoned the lampman on the surface to turn on the power, so that they could operate the pump, stating that the circulation had been established and the mine was in working condition. Whatever took place when the power was turned on cannot be told, as every man in the mine was killed by the force of the explosion that followed. Seemingly, the law does not cover this point by forbidding the turning on of the power after a cessation of work and before the mine has been thoroughly examined and pronounced safe.

One can imagine that this disaster might have been avoided by providing a separate power line for operating the main pumps at the shaft bottom, which would have enabled the power to have been turned on the pumps without affecting the inside of the mine. But it can be said in truth that few operators would consider this precaution to be necessary. However, a simple means could be taken to avoid accident, without adding materially to the expense, by installing a switch at the shaft bottom whereby the power could be cut off from the mine at any time desired.

Again referring to the requirements of the mine law, the occurrence of this disaster suggests that a section of the law might read as follows:

The fan shall run continuously throughout 24 hr. of the day, except that, for the making of necessary repairs, the operation may be suspended after all the men have been withdrawn from the mine. In case of such suspension, the fan shall again be operated continuously for at least four hours previous to the time when men may be permitted to enter the mine or the power is turned on for any purpose whatsoever. At the expiration

of four hours of continuous operation of the fan after suspension, the mine shall be examined by the fireboss in the regular way. He shall make a thorough inspection for gas in all working places, traveling roads, passageways, pumprooms and other pints where gas may have accumulated, giving particular attention to places where electrical equipment has been installed.

As previously stated, every disaster has for us its lesson, which should be carefully heeded in the interest of greater safety in mining. It would be interesting to learn what others think as to whether or not the law was violated when these nine men who were killed went into the mine before it had been examined by the fireboss and pronounced safe. G. E. DAUGHERTY.

Pikeville, Ky.

### Surplus of Labor in Mines a Myth

**E**VIDENTLY the letter of W. M. Chambers, entitled "Are the Miners Un-American?" *Coal Age*, July 8, p. 72, was written from the viewpoint of the United Mine Workers. The letter appears to confute the claim made by a previous writer that the demands of the miners, last November, were un-American. It will be remembered that these demands, made by the leaders of the miners, were for a 60 per cent increase in wages and a six-hour day.

Few people are to be found who will question the loyalty of the miners during or since the war. In truth, a large majority of the miners were surprised when they learned for the first time of the exorbitant and unreasonable demands made by their leaders and which precipitated the strike at that time.

The burden of Mr. Chamber's argument seems to be that his assumed "surplus of labor in the mines" is evidence that a six-hour day for the miner is all that is needed to mine the required amount of coal and supply every demand of the market. It is, of course, true that the question of production is not one of shortage of labor in the mines, but of car supply for loading and transporting the coal to market. But this fact does not furnish any support to the argument that there is a surplus of labor. That claim is a myth.

#### INCREASED PRODUCTION OF COAL DEMANDS USE OF ALL AVAILABLE LABOR

None will deny that, with the exception of a brief period of business anxiety immediately following the war, the supply of coal has never equaled the demand. At the present time this lack is causing much distress throughout the country, and the shortage of coal is becoming more and more acute as winter approaches. Factories and mills have been closed down for lack of coal, which has had the effect of increasing the cost not only of coal but of all necessities and boosting the already high cost of living.

There are those who will blame this condition largely to the profiteer; but let me say that the way to stop profiteering is to throw off our coats and go to work and produce in a truly American way. Production and pro-

duction alone will be able to do what Congress has so long failed to accomplish in the way of restoring normal conditions. It would not be American to establish a six-hour day and, to that extent, limit our ability to produce not only for the markets of this country but for the world.

Who would attempt to claim that it is un-American to expand our industries so that our production may supply both the needs of our country and those of foreign markets? Can we expect to do this with a six-hour day, which would hardly be sufficient to meet the growing demands of our own industries at home, to say nothing of sending our products abroad and stimulating our export trade?

Regarding the claim of Mr. Chambers that "in all our large coal mines, the miner is compelled to stay underground practically from nine to eleven hours," "I have heard of but few cases where the miners were held underground more than eight hours and, in a large majority of cases, their work is completed in six hours. In some of the largest coal mines in the East, the miners can be seen coming home at any time from twelve to three o'clock, and their earnings compare favorably with those of workers in other trades and industries.

Let us at least wait until we have had a good car supply for a period of several months or a year, and see if we are then overstocked with coal or the business of the country is demoralized as it is at the present time. It will be time enough then to consider the question of a six-hour day in the mines as an American institution.

W. H. NOONE.

Thomas, W. Va.

### Poor Car Supply Blamed For Miners' Demands

WELL worth reading is the letter of W. M. Chambers, *Coal Age*, July 8, p. 72. To the average outsider, as Mr. Chambers says has been charged, the recent demands of the miners may seem to indicate that, as a class, they are "un-American." However, those more familiar with the present situation in the coal industry and with conditions as they exist underground will lay a large portion of the blame for the miners' demands at the door of the operators.

An experience of more than twenty years, in the coal mines of Great Britain and this country, has convinced me that one feature in particular is largely responsible for the dissatisfaction of miners. I refer to what may be styled the overcrowding of the mines, by opening up a larger number of working places than can be supplied with an adequate number of mine cars for the day's loading. The natural result of this tendency on the part of mine operators is that, owing to the inadequacy of the supply of mine cars, each miner produces little more than 25 per cent of his capacity.

Speaking from a familiarity with conditions in the anthracite region, I can say without hesitancy that there are scores of places in our mines today where the miners are only supplied with half the number of cars they could easily load. And, yet, more chambers are being opened up at these collieries, and forty miners are employed in a section where twenty could load all the cars that are available. This condition of affairs is, in my opinion, the chief cause of the present demands of the miners more than the high cost of living.

While the statement made by Mr. Chambers to the effect that the miner is compelled to stay underground from nine to eleven hours does not hold true in the anthracite mines, it is still a fact that the grievances I have mentioned are equally bad. The amount of work a miner can do, or his earning capacity, cannot be judged by the number of hours he spends in the mine. Given the needed number of cars, some miners will load in five hours what other miners would fail to load by working overtime. Therefore, it is the conditions under which he is compelled to work and the facilities afforded him that develop dissatisfaction.

Another important feature affecting the situation is the general practice in respect to underground haulage. The tendency toward concentration, in the transportation of coal underground, is carried to the extreme in many of our large collieries. While the plan has undoubted advantages, it cannot be denied that much delay is caused by the necessity of one branch of the system having to wait on another branch, which may be held up for a time by a third. As a result, numbers of miners at the working face are thrown idle for lack of cars to load.

#### CONGESTION IN HAULAGE CAUSES DELAY

In a way it seems to me that conditions in underground haulage are very similar to the conditions in railroad haulage on the surface. Much of the delay, in the distribution of railroad cars at the mines, can be attributed to the congestion of traffic owing to an inadequate track system. If this is true on the surface, it is likewise true underground.

The attempt to open too many places on a single road; or the working of too large a number of men in a section of a mine that is reached by a single haulage road leads to congestion and consequent delay in the distribution of cars and the haulage of coal to and from that section. The effect is to demoralize the entire output of the mine, as one driver must wait for another and one motorman for another, while the miners load less than half the number of cars that they might.

Starting at the foot of a shaft, in a mine where these conditions prevail, one finds the footman "waiting for a trip." Proceeding into the mine, the trip is found held up by a cross-entry driver who has failed to make connection because of delays in getting empty cars. In other words, the entire system is blocked because of lack of track facilities.

#### THE REAL CAUSE OF MINERS' COMPLAINTS

It is no wonder that two o'clock finds a number of the miners on their way home with the complaint that they have waited long enough for cars to load. The next day it is much the same and payday finds the miner short of his monthly stipend and dissatisfied, because he knows he could earn more if given the opportunity to work.

Being familiar with the habits of miners and their mode of living, I can say that it is not so much their complaint of the number of days worked, but the amount earned each day they are in the mine. My belief is that the remedy for this situation is in the hands of the operators, who should make every effort to give their miners an adequate supply of cars to load each day they are in the mine, if that is only three days a week. Let us not send men into the mine six days in the week to do the work that a good miner can do in three days if given a prompt and adequate supply of cars to load.



It is true, as stated by Mr. Chambers, that England has given her miners a seven-hour day, from "bank to bank." Thirty years ago my father and thousands of other miners worked but a six-hour shift in the mines of Durham County, in the north of England. But, believe me, it was hard work for those six hours, and each man stayed at the face until relieved by his buddy. Compared with that the present working day of the miners is as pink tea to black coffee, and many *Coal Age* readers will verify this statement.

In closing permit me to say a word regarding the unequal rating of daymen. In my opinion, a good dayman must be a more skilled worker than the miner himself. Indeed, the life of the miner depends largely on the skill of daymen. The safety of the working places and the sanitary condition of the mine depend on the work of daymen.

Justice to this class of workers requires that they should be equally well paid with the miner, who as a general rule is useless outside of his working place. On the other hand, a competent dayman will be found taking the place of a miner or performing the work of the fireboss, bratticeman, trackman, motorman, runner, driver, engineer, etc.

Let us hope that the present Commission of Anthracite Workers, now in Scranton, will not make the serious blunder of which the Bituminous Commission was guilty.

RICHARD BOWEN.

Plains, Pa.

## Loopholes in Mine Laws Are the Frequent Causes of Accidents

SOME mine laws appear to be drawn with a loophole. This may be done for the convenience of a certain class of operators, or it may come from the lack of acquaintance of the lawmakers with mining conditions. It was such a construction, I assume, that gave rise to the argument regarding the real meaning of Sec. 3, Art. 10, of the Bituminous Mine Law of Pennsylvania, as set forth in *Coal Age*, July 15, p. 136.

The argument was in regard to whether the five rooms turned off the return airway of a pair of headings, as shown in the figure on page 136, would comply with the law if worked with open lights when gas was being generated at the faces of these headings.

As I read this section of the law, safety lamps are not required to be used in the five rooms mentioned. In my opinion, the meaning of the law is that when gas is generated only in active entries and not in the rooms it is assumed that the air current is diffusing the gas as fast as it is liberated at the faces of the headings; and the conclusion of the law framers was that an explosive mixture could only occur therefore at the face of said entries.

One observes in the figure (p. 136) that the air is split on the main intake entry and a separate current is carried to the face of this pair of headings. That being the case, it is fair to assume that the air returning through the rooms cannot carry a large percentage of gas, provided the quantity of air circulating in this split is sufficient for the diffusion of the gas generated and there is no interruption of the circulation.

However, the use of locked safety lamps at the faces of the headings and open lights in the rooms would involve the harmful practice of "mixed lights." A man from any of these rooms might have occasion to visit the face of one of the headings and he would probably

carry his open light on his head. Now, it is clear that an explosive atmosphere must exist, for a short distance at least, back from the face in each heading, and it is easy to imagine the danger that the presence of an open light would incur.

Again, to allow open lights in the rooms when safety lamps are required in the headings would be to encourage men to take chances. In view of these facts and other similar instances that might be mentioned, one is forced to the unhappy conclusion that the framing of mine laws, which should always be in charge of those who are practically familiar with conditions as they exist in mines, is too frequently the work of men who are not mining men and therefore not competent to draw up a section that will provide for the safety of men working under such conditions. Thus, the attempt to safeguard the work in mines may and often does create a new danger that is not suspected.

### SAFETY LAMPS SHOULD BE USED EXCLUSIVELY IF REQUIRED AT ALL.

My opinion is that if gas is generated in such quantities as to warrant the use of locked safety lamps in any portion of a mine, safety lamps should be used exclusively throughout the mine, except perchance, drivers and motormen working on the main intake might be permitted to use open lights.

My understanding of "active entries" is such entries as are being pushed ahead for the development of a certain section of a mine where another section is about to be abandoned. Of course, such entries are liable to encounter gas, which makes the use of safety lamps a necessity; and the meaning of the law is, I assume, that the quantity of gas generated will determine whether open lights can be used in the rooms on the return.

### MEN WILL TAKE CHANCES

There was a time, when working in France and driving an entry in the solid for the purpose of opening that section on the longwall system, we were given safety lamps, and a safety zone was established for a distance of 100 ft. back from the face of the entry. At that point a board was placed on which was a notice "Keep out with an open light." An extra safety lamp was hung on the board for the use of anyone who wanted to go to the face. He would exchange his open light for the safety, before proceeding. But, as I stated, men would take chances and even the boss would occasionally come to the face with an open light on his head, a safety lamp hanging from his belt and a lighted pipe in his mouth.

Sound judgment will admit that any increase of gas at the face due to striking a feeder or pocket, or the occurrence of a squeeze coming from another section of the mine, would endanger the lives of men working in the rooms with open lights. I know of an instance where a pocket of gas existed under pressure, behind a slip in the strata. When this point was reached by the drills at the head of the entry, thousands of cubic feet of gas were thrown into the current, causing a very dangerous mixture.

When we reflect on these possibilities we wonder that there are so many loopholes in our mining laws that are, at times, safety measures in disguise. Let the fireboss who made this inquiry take nothing for granted; but visit the faces of the rooms, each day, with a reliable safety lamp and observe the condition of the air in those rooms with respect to gas and dust.

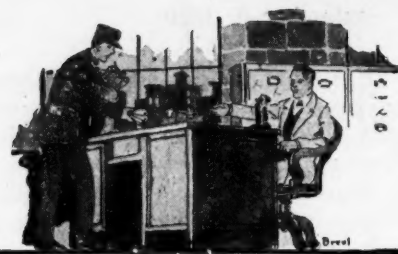
Peru, Ill.

GASTON F. LIBIEZ.



# Inquiries of General Interest

Answered by  
James T. Beard



## Static Pressure Due to a Fan

UPON reading the reply to the question asking for the theoretical water gage due to the action of a centrifugal fan, *Coal Age*, July 15, p. 136, I wondered if the result obtained was correct for the water gage when the fan was running in a closed space, as stated in that inquiry. The fan is described as being theoretically perfect, 12½ ft. in diameter and running at a speed of 85 r.p.m. "in a closed space."

There is no doubt that the method given in the reply to the inquiry is correct for ascertaining the theoretical water gage of a fan running under normal conditions. However, I understand the expression "running in a closed space" to mean that both the inlet and the outlet to the fan are closed.

In that case the whole mass of the air in the enclosed space will be revolved at the same speed as the fan and the pressure produced will be that due to the centrifugal force developed by reason of the weight of the air and its revolution about the center of the fan.

Now, I estimate the weight of the air in the fan, assuming its density is 0.0766 lb. per cu.ft., thus,

$$W = 0.0766(0.7854 \times 12.5^2) = 9.4 \text{ lb.}$$

The radius of the fan or half its diameter is  $R = 6.25$  ft.; and the speed of turning,  $N = 85$  r.p.m. Then, substituting these values in the usual formula for centrifugal force, I obtain for the total force developed in the fan,

$$F = 0.00034WRN^2 = 0.00034 \times 9.4 \times 6.25 \times 85^2 = 144.32 \text{ lb.}$$

In calculating the weight of air within the fan, I have assumed a width of one foot, which makes the total surface at the circumference against which the air presses  $3.1416 \times 12.5 = 39.27$  sq.ft. Then, dividing the total force developed by the area pressed gives for the unit pressure  $144.32 \div 39.27 = 3.67$  lb. per sq.ft., or a water gage of  $3.67 \div 5.2 = 0.71$  in.

It seems to me that this would be the static gage developed by the fan running in a closed space.

Coalhurst, Alberta, Can.

INQUIRER.

The correspondent makes at least three errors in his calculation of the static gage of a fan running in a closed space. In the first place the meaning of "running in a closed space," when speaking of a fan, is that the discharge opening is entirely closed. It does not refer to the closing of the inlet opening; although if it were possible to completely close the discharge opening the question of closing the inlet or leaving it open would be of little importance.

Again it is wrong, in estimating the weight of air revolved in the fan, to base the calculation on the entire volume of the fan from center to circumference. The calculation should include only the air contained between the blades of the fan. Also, in calculating the centrifugal force developed, the length of the radius is the distance from the center of the fan to the center of gravity of the revolved air, which in this case is

about 5 ft., assuming the blades are 30 in. in depth measured radially. Making these corrections would reduce the water gage, estimated by this method, to less than ½ in. which is absurd.

This question was asked in an Illinois Mine Managers' examination held at Springfield, Dec. 10, 1900, and will be found answered in *Mines and Minerals*, Vol. 21, p. 379, the only change being made in the diameter of the fan and its speed. As there explained, while it is possible to estimate the approximate static gage of a fan when the actual gage and the velocity of the air are known, by multiplying the ratio of the gage to the velocity in feet per second, by twice the acceleration due to gravity, a like estimation of the static gage can only be made by basing the calculation on the head of air due to the velocity of the blade tips, as was done in the reply to this inquiry in *Coal Age*. The result there ascertained is the theoretical water gage due to the fan running in a closed space.

## Safety in Electric Firing

FROM the large number of fatal accidents that have occurred as a result of premature explosions in electric blasting it would seem that some means should be adopted that would render these occurrences practically impossible. In this connection, an idea has occurred to me that seems both simple and certain of proving effective in absolutely preventing the accidental premature explosion of an electric fuse.

My plan is to create a short-circuit of any possible current that would otherwise reach and explode the



fuse, by soldering lightly the two lead wires at a point a short distance from the ends of the two wires, say three or four inches. This will leave a sufficient length of the wires to connect them with the firing cable. If this is done, should the firing cable by any accident come in contact with and receive current from a live wire, the current could not reach the fuse owing to the short-circuit provided by soldering together the lead wires, in the manner indicated in my sketch.

When the hole has been charged and tamped, the lead wires connected with the cable and all is ready the operator pulls the two wires apart, breaking the solder, and proceeds to retire from the place and fire the shot. It seems to me that this plan would confine the danger period to a very brief interval between the breaking of the wires apart and the retirement of the operator to a safe distance where his battery is located.

So. Brownsville, Pa.

R. H. SISLEY.

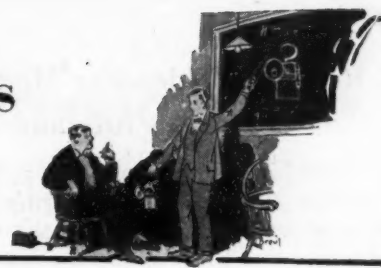
The idea presented by this correspondent is worthy of discussion and we doubt not will receive the attention it deserves from those who have had experience in electric shotfiring in mines.





# Examination Questions

Answered by  
James T. Beard



## Miscellaneous Questions

(Answered by Request.)

**Ques.**—An air current of 91,850 cu.ft. per min. is passing through a mine under a 4-in. water gage. If the equivalent orifice of the mine is now reduced to 10 sq.ft. what will be the quantity and water gage?

**Ans.**—The present equivalent orifice of the mine is

$$A = 0.0004 \frac{Q}{\sqrt{i}} = 0.0004 \frac{91,850}{\sqrt{4}} = 18.37 \text{ sq.ft.}$$

Assuming a constant power on the air, the cube of the quantity varies as the square of the orifice of the mine. In other words, the cube of the quantity ratio is equal to the square of the orifice ratio; thus,

$$\left(\frac{Q_2}{Q_1}\right)^3 = \left(\frac{A_2}{A_1}\right)^2$$

$$Q_2 = 91,850 \sqrt[3]{\left(\frac{10}{18.37}\right)^2} = 61,236 \text{ cu.ft. per min.}$$

The water gage varies inversely as the quantity

$$w.g. = 4 \times \frac{91,850}{61,236} = 6 \text{ in.}$$

**Ques.**—A mine passes 200,000 cu.ft. of air per min. through its workings. In winter the air enters at an average temperature of 32 deg. F. What effect, if any, will this have on the workings? Approximately, what amount of moisture will this current of air carry out of the mine in 24 hr., and from where will this moisture come?

**Ans.**—The question does not state the degree of saturation of the air going into or passing out of the mine. But, assuming complete saturation in both instances, a current of 100,000 cu.ft. per min. passing into the mine, at a temperature of 32 deg. F., will carry with it a weight of moisture

$$\frac{100,000 (0.6235 \times 0.0891)}{0.37 (460 + 32)} = 30.51 \text{ lb. per min.}$$

The weight of moisture in the air passing out of the mine at a temperature of, say 65 deg. F. is

$$100,000 \frac{460 + 65}{460 + 32} \times \frac{0.6235 \times 0.3033}{0.37 (460 + 65)} = 103.88 \text{ lb. per min.}$$

Subtracting the weight of moisture in the intake from that in the return current gives 73.37 lb. of moisture absorbed in the mine. As the return current is rarely wholly saturated the weight of moisture extracted from the mine may be roughly estimated as 70 lb. per min., or  $70 \times 60 \times 24 = 100,800 \text{ lb.}$ , say 50 tons.

**Ques.**—What volume of air at 60 deg. F. and 30 in. barometric pressure will be consumed in the complete combustion of 100 lb. of coal giving the following analysis: Fixed carbon, 74 per cent; hydrogen, 5 per cent; oxygen, 9 per cent; nitrogen, 2 per cent; ash, 9 per cent; sulphur, 1 per cent?

**Ans.**—In burning this weight of coal, there are oxidized: Carbon, 74 lb.; hydrogen, 5 lb.; and sulphur, 1 lb. Except for the nine pounds of oxygen in the

coal, the required weight of oxygen is taken from the air consumed. Assuming complete combustion, each pound of carbon takes up 2½ lb. of oxygen; a pound of hydrogen absorbs 8 lb. of oxygen, and a pound of sulphur 1 lb. of oxygen. The total weight of oxygen taken from the air is, therefore,  $74 \times 2\frac{1}{2} + 5 \times 8 + 1 = 229\frac{1}{2} \text{ lb.}$  But, since oxygen forms 23 per cent, by weight, of air, the weight of air consumed, in this case, is  $229\frac{1}{2} \div 0.23 = 997\frac{1}{2} \text{ lb.}$

The volume of one pound of air at 60 deg. F., barometer 30 in. is

$$V = \frac{460 + 60}{1.3273 \times 30} = 13.06 \text{ cu.ft.}$$

which makes the volume of air consumed in burning 100 lb. of this coal, under the given conditions  $997 \times 13.06 = 13,020.8 \text{ cu.ft.}$

**Ques.**—The quantity of air entering a mine is 100,000 cu.ft. per min. Estimating the effective power of the furnace as 40 hp., what would be the height of water gage in inches?

**Ans.**—In this case, the estimated power on the air is  $40 \times 33,000 = 1,320,000 \text{ ft.-lb. per min.}$  The unit pressure producing the circulation is found by dividing this effective power by the quantity of air passing per minute; thus,  $p = 1,320,000 \div 100,000 = 13.2 \text{ lb. per sq.ft.}$  The corresponding water gage is  $13.2 \div 5.2 = 2.54 \text{ in.}$

**Ques.**—How would you ventilate the workings of a slope mine that generates large quantities of explosive gas and in which the coal dips 6 per cent, in order to keep the gobs free from gas?

**Ans.**—As far as practicable, this mine should be worked on the retreating system and ventilated by carrying the air directly to the head of each air split and returning it through the rooms to the main return air-course. Assuming the rooms are driven to the rise, each lift should be ventilated by a separate split of air carried by the air-course to the head of the gangway and then made to return through the rooms so as to sweep each working face and pass out through the gob if this section is worked advancing. If the work is retreating the safest plan is to drive the cross-headings three abreast, or to make the intake air-course the haulage road, and carry the return air from the pillar workings and gob section into the main return.

**Ques.**—If a cross-heading driven due north has a dip of four feet in that distance and the coal seam pitches due west one foot in six feet, how far east or west of the face of the cross-heading is the line of strike that passes through the mouth of the cross-heading where it is turned off the main entry?

**Ans.**—The pitch of the seam being one in six, due west, a rise of four feet will require a distance of  $4 \times 6 = 24 \text{ ft.}$  Therefore, the line of strike passing through the mouth of the cross-heading where it is turned off the main entry is 24 ft. west of the face of the heading.

## Reported Tidewater Movement of Coal During July and August

COMPLETE figures on the destination of coal handled over tidewater piers during the month of July are now available, furnished the Geological Survey by the Tidewater Bituminous Coal Statistical Bureau. The total quantity dumped at tide was 4,915,000 net tons, an increase over June, hitherto the maximum month, of 216,000 tons. The effect of Service Order No. 6, which was in force throughout the month, is seen in the shipments to New England, which were 1,006,000 net tons, as against 772,000 in June, an increase of 234,000 tons, or 30 per cent. The increase in the New England movement was most marked at New York and Baltimore. At Philadelphia the New England tonnage decreased. Coal for local use and for coastwise destinations other than New England ("inside Capes" and "other tonnage") increased about 10 per cent.

Because of the larger tonnage dumped during the month these increases for New England and local account were possible without a material reduction in bunker coal (832,000 tons as against 850,000 in June) and with only a slight cut in exports. The total exports were 2,081,000 net tons, or within 94,000 tons of the June exports, which had set a new record.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR JULY, 1920  
BY PORTS

(In Net Tons)						
Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total Dumped
Coastwise						
New England..	282,000	56,000	101,000	567,000		1,006,000
Exports.....		174,000	407,000	1,426,000	74,000	2,081,000
Bunker.....	356,000	47,000	97,000	324,000	8,000	832,000
Inside Capes.....		168,000	94,000	25,000		287,000
Other tonnage....	665,000		9,000	33,000	2,000	709,000
Totals.....	1,303,000	445,000	708,000	2,375,000	84,000	4,915,000

The amended New England order (Service Order No. 11) did not go into effect until Aug. 2. Destination of coal dumped at tide during the second and third weeks of operation of the order are shown in the following table. Dumpings of cargo coal for New England account during the first three weeks' operation of the order were 648,000 tons, or at the rate of about 950,000 tons per month. Total dumpings over tidewater piers for all purposes were very heavy—3,645,000 for the three weeks, or at the rate of over 5,300,000 per month. Exports appear to have continued in greater volume than ever.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR SECOND AND THIRD WEEKS OF AUGUST, 1920 (a)

(In Net Tons)						
	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total Dumped
Aug. 8-14						
Coastwise to New England.....	65,000	11,000	16,000	92,000	See Below	184,000
Exports.....		70,000	152,000	357,000		579,000
Bunker.....	82,000	14,000	18,000	70,000		184,000
Inside Capes.....		53,000	26,000	3,000		82,000
Other tonnage....	176,000			4,000		180,000
Totals.....	323,000	148,000	212,000	526,000		1,209,000
Aug. 15-21:						
Coastwise to New England.....	75,000	8,000	24,000	101,000		208,000
Exports.....		94,000	125,000	314,000	35,000	568,000
Bunker.....	98,000	9,000	16,000	69,000	3,000	195,000
Inside Capes.....		33,000	20,000	6,000		59,000
Other tonnage....	172,000			32,000	1,000	205,000
Totals.....	345,000	144,000	185,000	522,000	39,000 b	1,235,000

(a) As reported to the Geological Survey by the Tidewater Bituminous Coal Statistical Bureau. (b) Includes total Aug. 1-19.

These figures, however, represent coal handled at the piers, not coal shipped from the mines. According to statements furnished the Geological Survey by the American Railroad Association, loadings at the mines

under Service Order No. 11 may be summarized as follows:

	Cars
Short at end of first week (Aug. 7).....	1,588
Short at end of second week (Aug. 15).....	1,977
Short at end of third week (Aug. 21).....	2,226

As the initial assessment under the order was 923 cars per day, the cumulative movement at the end of the third week was 13 per cent behind. Considerable quantities of this coal consigned to New England have not been dumped for lack of vessels at the ports. On Aug. 26, for example, the coal on hand at Hampton Roads for New England account was reported to the American Railroad Association as 88,469 net tons, while the capacity of vessels available for loading this coal were only 7,952 tons.\*

\*Editor's Note—The lack of boats at Hampton Roads last week is reported to have been due to fog conditions at sea and to have been a temporary shortage.

## Squeezed by Profiteers, Shipping Board Asks Priority for Bunker Coal

FOR the last two months or more the U. S. Shipping Board has been forced to pay such prices for bunker coal as to stir it to the most pronounced activity in an effort to relieve the situation. It is said that on a few occasions full advantage had been taken of urgent necessities on the part of the Shipping Board vessels and that very fancy prices were exacted. As a result the Shipping Board has asked for a priority order for its bunker coal. The matter was the subject of a conference between Shipping Board officials and members of the Interstate Commerce Commission, but no conclusions have been announced.

It is understood that the White House has been fully acquainted with some of the Shipping Board's experiences. Some are of the opinion that this is the straw which is likely to break the camel's back. It has been known for some time that the White House has been judging the coal situation more from the matter of price than from the standpoint of efficiency of distribution. It can be stated on good authority that the probability of Government regulation of the coal industry has not passed.

## Palmer Orders Prosecution of Coal Dealers Boosting Prices by Resale Schemes

CONTINUING the efforts of the U. S. Department of Justice to put an end to profiteering in bituminous coal, Attorney-General Palmer on Monday, Aug. 23, issued instructions to all U. S. District Attorneys to investigate all cases where prices to the consumer had been enhanced through repeated resales or conspiracies to increase the price of coal.

The letter of instructions sent to prosecuting officers by the Attorney-General reads:

In connection with previous instructions to investigate and institute prosecutions in cases where unreasonably high prices have been exacted in the sale of bituminous coal, you are instructed to investigate cases where the price to the consumer has been enhanced through repeated resales by dealers successively buying and selling the same coal, and to institute prosecutions against such dealers, where the facts warrant, for engaging in an "unfair or deceptive or wasteful practice or device" or a "conspiracy, combination, agreement, or arrangement" to enhance the price of coal by such practice or device, in violation of Section 4 of the Lever Act, as amended by the act of Oct. 22, 1919.



# The Ordeal of a Consulting Economist Who Is Not a Statistician\*

Household Budgets and Living Costs as Wage Basis and Hazards of Anthracite Mining Land Even the Voluble Mr. Lauck in a Tight Fix—When \$6 a Day Was Set as Minimum Subsistence for Common Mine Labor, Government Employees Asked \$8

IT HAS been shown in the first of this series of articles that W. Jett Lauck, consulting economist for the United Mine Workers before the Anthracite Coal Commission, signally failed in his attempt to demonstrate, through computations "neither statistically nor mathematically correct," that the earnings of the anthracite-mine workers had not kept pace with the increased cost of living and were not on a par with those of bituminous-coal miners or of wage earners in other occupations requiring similar skill and experience. The other lines of attack engineered by Mr. Lauck made scarcely more impression than did his exhibits of wage earnings, irregularity of employment, etc., which were discussed in the previous article. These, according to the evidence permitted to be offered at the hearings, were directed mainly from two angles: (1) the application of household budgets and living costs to the adjustment of wage scales, and (2) the occupational hazard of anthracite mining.

## OPERATORS REFUSE CLOSED-SHOP DEMAND

As was clearly brought out by S. D. Warriner in his closing argument before the commission, on all but two of the questions in dispute before the commission, which were embodied in eighteen demands, agreement had practically been reached in the joint and separate conferences with the Secretary of Labor. One of the exceptions was demand No. 2, which asked that "the present wages of the anthracite-mine workers be increased to correspond to the increases granted the bituminous-mine workers by the Presidential Coal Commission." The other was the demand (No. 6) for the closed shop in the anthracite region. In the conferences with the Secretary the latter had been put in the form of a demand for the abolition of clause IX of the award of the Anthracite-Coal Strike Commission. This clause reads: "That no person shall be refused employment, or in any way discriminated against, on account of membership or non-membership in any labor organization; and that there shall be no discrimination against, or interference with, any employee who is not a member of any labor organization by members of such organization."

The reply of the operators to this demand at the time the committee was meeting with the Secretary left no doubt as to its interpretation. They said: "We definitely decline to enter into any contract which alters the principles of the award of the Anthracite-Coal Strike Commission or the decisions of the Board of Conciliation, and especially that part of the award which provides for the open shop and the right to protection of all employees against discrimination on account of membership or non-membership in a labor organiza-

tion." The present discussion, however, has to do with the first of the two demands which precipitated the final breaking off in negotiations, namely Demand No. 2, quoted above.

## LAUCK PRESENTS NUMEROUS DOCUMENTS

It developed during the hearings that Mr. Lauck and his colleagues concluded they had not asked for enough when the demand was made for "increases to correspond with the increases granted the bituminous-mine workers," for the operators had shown conclusively that the yearly earnings of the anthracite miners were equal to, if not in excess of, those of the bituminous-mine workers even after the increases granted by the President's commission had been applied, the steadier employment offered by the anthracite industry giving the workers in that region a decided advantage over the bituminous-mine workers.

As Mr. Lauck's case, so carefully built up, showing the unfavorable comparison of the anthracite miners with workers in other industries, and particularly with the bituminous-coal-mine workers, had been disproven, he and his associates found it necessary to withdraw from that line of attack and to concentrate their efforts on an appeal to the commission to render its decision upon the theory of a living wage as developed from budgetary studies of family expenses. Some of the documents submitted in support of this contention were pamphlets on "Changes in the Cost of Living and Prices, 1914-1920"; "Sanction for a Living Wage," "Budgetary Standards of Living," "Cost of Living in Coal Towns," "What Should Be a Living Wage," "The Practicability of a Living Wage," and "Food Prices in Scranton and Other Cities."

It is not necessary to consider in detail these or the other exhibits which were submitted in order to substantiate the theory that a living wage, not the capacity or industry of the worker or the value of his services to his employer, should be the chief factor in the construction of a wage scale.

## BUDGETARY STUDIES SUPPORT WAGE DEMAND

In making demands for a "living wage" based on the budgetary "studies" the answer was twofold in character: (1) \$2,200 was the amount of income necessary to maintain the average mine worker's family according to the American standard of living, and (2) the minimum wage rate for a common laborer in order to keep him on a bare subsistence level was \$6 for an eight-hour day, i. e., nearly as much per hour as common labor outside the anthracite regions was paid per day in pre-war times. Consequently all of the budgetary "studies" were made to equal or to exceed \$2,200 as the income necessary to support an average family of five persons—father, mother, and three children under sixteen years of age.

\*This is the second of a series of articles on the consulting economist in wage controversies. The first article of the series appeared in *Coal Age* last week, page 492.

In responding to the demand for a "living wage" the contention of the operators was that while there was no disagreement as to the general principle that any industry should pay its employees sufficient wages to enable them, with proper economy and thrift, to live comfortably and to save something besides, no practical method of applying the theory to every-day life had been or could be devised. Like many other beautiful theories for the amelioration of the laboring classes, it was impossible of practical application. Moreover, it was held by the operators that they were paying, and since the strike of 1902 had paid, living wages to their employees, a truth which they asserted was substantiated by the general prosperity of the region in which anthracite mining was the dominant industry; by comparison of rates of wages and earnings of mine workers with those of other industries; by the deposits in savings banks, which in four years had shown an increase of over \$52,000,000, or 48 per cent; by the investments in Liberty Loans; by the patronage given to amusements, by the time taken from employment for recreation, and by the comfort in which all the mine workers were able to live.

#### ECONOMIST CONVICTED OUT OF HIS BOOK

The entire insincerity of Mr. Lauck's contention for a subsistence wage of \$2,200 a year was exposed, and he was given the most uncomfortable period in his experience before the Anthracite Commission when Mr. Warriner in his cross-examination of the consulting economist read from his own (Mr. Lauck's) book published in 1917 (not included among the many exhibits on this subject filed with the commission) that \$800 yearly income might be considered a living wage. His only defense was that this book was written in 1915 and had pursued him through ten arbitrations, but he was compelled to admit that if the cost of living had increased, as he claimed, 100 per cent to 1920, the income necessary this year to maintain the same standard would be \$1,600 or \$1,700.

That was a simple problem in multiplication, but Mr. Lauck's proficiency as a mathematician was put to a severe test when he was confronted with a problem involving the application of the rule of three. He could not, or at least would not, see the answer to the question propounded to him by Mr. Warriner, that if the cost of living in the large cities, holding 50 per cent of the population, had increased 110 per cent from 1914 to 1920, and for the country as a whole had increased 100 per cent, then it naturally followed that for the smaller cities and rural districts containing the other 50 per cent of the population the cost of living had increased 90 per cent. The problem was too much for him and he had to confess that he was not a statistician but an economist. These figures would not juggle in a manner satisfactory to Mr. Lauck. In brief it may be stated that the figures upon which Mr. Lauck had predicated his demand for "a living wage" of \$2,200 a year were shown to have been as misleading as his statistics of employment and of earnings in the anthracite region, and were completely discredited.

#### BITUMINOUS SCALE ALLOWS FOR IDLE DAYS

In support of the demand for a minimum wage rate of \$6 a day for common labor it was stated that the \$1 a day increase awarded to day labor in the bituminous mines by the President's commission had established \$6 a day as the minimum rate for bitu-

minous-mine workers. This statement also was shown not to have been in accordance with the facts. Moreover, even if the statement had been true, it is well known that the increases granted the bituminous miners, which, as Commissioner Colver, of the Federal Trade Commission, said, made "a wage so high as to seem unheard of," were due to the large number of idle days for which the miners were not to blame.

The intention was to make it appear to the public that the anthracite operators wished to penalize their employees for taking advantage of the opportunity for employment offered them by reducing the unit rate of payment, as compared with bituminous-mine workers, whereas the unit rate for the latter had been advanced because of lack of opportunity to earn a livelihood. At the same time that Mr. Lauck and his associates were holding that \$6 a day was a minimum wage on which common labor could subsist, employees of the U. S. Government were circulating an appeal to Congress that \$3 should be established as a minimum wage for Government employees.

In what was designated as Miners' Exhibit No. 26, entitled "Occupation Hazard of Anthracite Miners," Mr. Lauck essayed the role of expert and authority on vital statistics as applied to mining in general and to anthracite mining in particular. The pamphlet submitted as Exhibit No. 26 consisted of fragmentary and *ex parte* quotations from various unrelated official reports and other authorities. In selecting the material to be included in the pamphlet care was taken to exclude such accepted expert opinions on the hygienic aspects of coal mining as those of Sir Thomas Oliver and Dr. Frank Shufflebotham of England, nor was any evidence or opinion from physicians practicing in the anthracite region presented. On the other hand, certain pulmonary diseases incident to metal mining were made to appear as affecting workers in the anthracite mines, whereas anthracite-mine workers are peculiarly free from tubercular diseases such as arise from inhaling the siliceous dust in metal mines.

#### INCOMPLETE ACCIDENT STATISTICS PRESENTED

In a table of accident statistics the records were brought down only to 1916, and the years 1917 and 1918, which showed a pronounced decrease in the fatalities from accidents in the anthracite region, were excluded, although the statistics were available. No reference was made to the steps taken by the anthracite operators in recent years to reduce the liability to accident among their employees. The attention of Dr. Frederick L. Hoffman, the highest authority in the United States, if not in the world, on mortality and vital statistics, was called to Mr. Lauck's exhibit, and the reply of the operators to this exhibit was prepared by him. He clearly showed that in this sphere of activity, Mr. Lauck and his collaborator in the preparation of the pamphlet, Henry J. Harris, were little less than mountebanks seeking cheap notoriety, which the daily papers, particularly those in the anthracite region, seemed willing to accord them freely.

The third and concluding article of this series will deal with the exhibits which the commission declined to permit to be offered as evidence, but which, notwithstanding the action of the commission, Mr. Lauck felt free to give to the public through the daily press. It is no exaggeration to state that more mendacious statements than those contained in these exhibits never were foisted upon a gullible press and public.



## Civil Engineers to Vote on Proposal to Join Federated Societies

AT ITS annual convention in Portland, Ore., Aug. 10, the American Society of Civil Engineers adopted resolutions which provided "that the Board of Direction of the American Society of Civil Engineers be directed to submit at once the question of the American Society of Civil Engineers becoming a charter member of the Federated American Engineering Societies to referendum vote to the corporate membership of the American Society of Civil Engineers, as recommended by the Joint Conference Committee, said ballot to be accompanied by a copy of the constitution and by-laws of said Federation," and "that the Board of Direction of the American Society of Civil Engineers be further instructed in event of a favorable vote on said referendum to proceed at once to take such steps as may be necessary for the American Society of Civil Engineers to become affiliated with said Federation."

## Army to Get 100,000 Tons of Bituminous 400,000 Tons of Anthracite Needed

LIEUT.-COL. JAMES P. BARNEY, of the U. S. Quartermaster Department, has just completed a trip through the bituminous coal districts of the East, Middle West and South in quest of coal for army needs. He considers this trip a success, as he was able to contract for about 100,000 tons of the army's emergency requirements of 175,000 tons for immediate delivery. This coal was purchased at the mines at a reasonable price under existing conditions. The exact price is not divulged.

As the result of a general reorganization of the Quartermaster Corps, Lieutenant-Colonel Barney has been placed in direct charge of all the coal requirements of the army as chief of the purchasing division. He became identified with this special line of work when he was appointed in charge of coal confiscation under the Quartermaster General by the Secretary of War, in September, 1919. Under the new organization plans the purchase of fuel for the U. S. Army is decentralized and divided into six departments with separate headquarters, as follows: Northwestern Department, at Boston, Mass.; Eastern Department, at New York City; Southeastern Department, at Charleston, S. C.; Central Department, at Chicago; Southern Department, at San Antonio, Tex.; Western Department, at San Francisco, Cal.

A purchasing agent is to be in charge of the army's requirement at each of the above headquarters and all purchases, after the present emergency is past, are to be in their hands, the Washington headquarters to have administrative charge and to care for special emergencies and for liaison between the field offices. J. A. Lay is assistant to the chief of the purchasing division in charge of all coal matters.

In Colonel Barney's opinion there is only one important cause of coal shortage and high coal prices remaining, namely, that the diggers are receiving such high daily pay that "they can afford to work two or three days a week and ride around in their Fords or Packards the rest of the week." The report that there is from 80 per cent to 100 per cent of the car requirements at the mines being supplied by practically

all railroads was confirmed by Colonel Barney's observations at the coal centers which he visited.

Colonel Barney's trip was made for the special purpose of making emergency purchases of coal for army posts, especially hospitals, but it is planned to have additional purchases made through the six departments mentioned above. The 100,000 tons which has been obtained is only a small percentage of the 1,600,000 tons which is the minimum estimate of the army requirements at the present time. The purchasing division of the Quartermaster Department is now negotiating with E. W. Parker, of Philadelphia, in an effort to make arrangements for the purchase of 400,000 tons of anthracite coal from a number of leading anthracite producers. This coal is wanted for army posts throughout the East. The first assignments will be made to the army hospitals.

## Toms Creek No. 2 Team Wins Second Virginia First-Aid Meet

THE second annual Virginia Statewide First-Aid Meet, held in the town hall at Norton Aug. 14, under the auspices of the Virginia Coal Operators' Association, the U. S. Bureau of Mines and the American Red Cross, was a complete success. The large building was jammed with interested observers of the twenty-seven teams that were contesting, all of whom did good work. The Norton Concert Band furnished music for the occasion. Much regret was expressed that the heavy rains prevented the meet being held in the open, as a baseball game between Norton and Stonega had been arranged as the final supplementary attraction.

The judging in the contest was on a high plane—the problem was printed on the top of each score card and a correct outline of the proper method of doing the problem was printed on the back of it for the guidance of the judges. Each judge was instructed to inform the captain of the team which he was judging of the amount of his discounts and the reason for the same. The captain then had the option of referring the matter to a commission of first-aid men, whose decision was final. The plan produced good results. The first fifteen teams received prizes. Toms Creek No. 2 team, of the Virginia Iron, Coal & Coke Co., won first prize with a score of 100 per cent.

First prize comprised the Virginia Coal Operators' annual cup, six National Safety Council medals and a variety of household articles and sporting goods. The remaining fourteen sets of prizes included silverware, cameras, cigars, razors, tools, food products, furniture and wearing apparel. There also were a number of special prizes awarded as the result of a drawing by lot numbers.

### STANDING OF THE TEAMS

Teams	Companies	Mines	Percentage
1 Toms Creek No. 2.	Virginia Iron, Coal & Coke Co.	Toms Creek.	100
2 Stonega No. 1.	Stonega Coke & Coal Co.	Stonega.	99½
3 Pardee.	Blackwood Coke & Coal Co.	Pardee.	99½
4 Wilder.	Clinchfield Coal Corporation.	Wilder.	99½
5 Clinchfield.	Clinchfield Coal Corporation.	Clinchfield.	99½
6 Roda No. 1.	Stonega Coke & Coal Co.	Roda.	98½
7 Moss.	Clinchfield Coal Corporation.	Clincho.	98½
8 Toms Creek No. 1.	Virginia Iron Coal & Coke Co.	Toms Creek.	98½
9 Arno No. 1.	Stonega Coke & Coal Co.	Arno.	97½
10 Dante.	Clinchfield Coal Corporation.	Dante.	97½
11 Cranes Nest.	Clinchfield Coal Corporation.	Cranes Nest.	97½
12 Arno No. 2.	Stonega Coke & Coal Co.	Arno.	97½
13 Roaring Fork.	Blackwood Coke & Coal Co.	Roaring Fork.	97
14 Keokee No. 1.	Stonega Coke & Coal Co.	Keokee.	96½
15 Imboden.	Stonega Coke & Coal Co.	Imboden.	96½

### United Mine Workers to Start a Daily

SEEKING an organ that will represent the mine workers' contentions, the United Mine Workers are forming a stock corporation to start at Hazleton, Pa., a daily, to be known as the *Panther Valley News*. It will take over the plant of a weekly run under union auspices many years ago.

### Difficulty in Kelly's Creek Plants Is Adjusted

SEVERAL plants of the Kelly's Creek Colliery Co. in the Kanawha field were closed down during the second week of August by a strike growing out of a difference of opinion as to the proper construction to be placed upon that part of the new wage contract applying to payment for dead work. When the miners demanded an increase in pay for removing slate which would have amounted to an increase of 65c. a ton, the company refused to accede to their demands and the miners went on strike. One of the officials of District 17 finally paid a visit to the Kelly's Creek mines and though meeting with much opposition, finally adjusted the matter.

### More Trouble at Matewan

AS an outgrowth of the strike and labor trouble at Matewan, W. Va., in which 12 men were recently killed, A. E. Hatfield and Dr. Edward Simpkins were shot from ambush while seated in front of a hotel at Matewan on Saturday, Aug. 14. Only one shot was fired, the bullet piercing Hatfield's chest and lodging in Simpkins' jaw. Both men were taken to a hospital at Huntington, where Hatfield died Sunday morning.

Following the shooting, members of the state police arrested Fred Burgraf and preferred charges against him as being guilty of the shooting. Burgraf is already under indictment as one of fourteen persons charged with complicity in the riot at Matewan on May 19.

### Attempt to "Shoot Up" Freeburn

ON Saturday and Sunday, Aug. 14 and 15, a renewal of the attempt to shoot up the Freeburn, Ky., plant of the Solvay Collieries Co. was made, the shots being fired from the West Virginia side of the river. Shots were poured upon the Freeburn plant on Sunday and firing was resumed after members of the West Virginia state police had arrested an unidentified man as belonging to the roving band of gunmen that has been terrorizing the men at work during a considerable period recently.

Pennsylvania organizers were largely in evidence at numerous meetings held by miners in the Williamson field on Sunday, Aug. 15.

At the end of the second week of August more men were at work and more companies were operating than at any time since the beginning of the strike. It is regarded as probable that the leaders of the strikers realized that they were losing ground.

As an indication of how conditions were improving in the strike zone it may be stated that on Aug. 14 eighteen different companies were operating whose plants had been closed down since the strike began and it was found possible to increase production at the rate of 100 cars a day. In other words miners not on strike felt that they would be protected and therefore were

willing to return to work. Unless further violence is indulged in it is predicted that the strike will be at an end before Oct. 1 and that all except the most radical individuals and those who have instigated much trouble will be back to work. Already in some places men who have been on strike have applied for reinstatement.

The strike order originally issued was directed against seventy different mines, forty of which were closed down. Operations have now been resumed, however, at the plants of eighteen of the companies originally affected by the strike. On Aug. 14 there were still twenty-two mines idle, most of them lying off the main line of the Norfolk & Western Ry. A conservative estimate, it is said, places the number of miners who are really behind the strike at about 1,800 out of 6,000 employed.

### Two Ousted From Union Other Men Strike

WHEN two men, formerly leaders in the One Big Union, were refused membership in the United Mine Workers of America, the other mine workers at the Coal Mine, near Fernie, B. C., refused to work. The two men had refused to affiliate with the United Mine Workers, and the right to join was then denied them. Coal Creek became idle Aug. 6. At Michel all the men rejoined the United Mine Workers and the mine was running on the date of the Coal Creek strike.

### Too Bad for the Kansas Mine Worker!

FORMERLY attorney for the Kansas United Mine Workers, Jake (J. I.) Sheppard, of Fort Scott, is in full sympathy with them. "The fact is," says Sheppard, "the miners have been averaging this summer only two days a week in the Kansas fields." "Why then," asked an impertinent questioner, "if that is the case, did they refuse to work on Saturdays?" Sheppard had some sort of an answer ready: "Isn't a man who works as hard as the miners entitled to some sort of a holiday?"

### Mine-Rescue Crews Rival Canadian Mounted Police in Picturesque Heroism

RESCUE crews of the Bureau of Mines promise to take first place in deeds of picturesque heroism. The outposts of organized civilization have been pushed so far forward in Canada as to rob the mounted police of much of their spectacular work. With the increasing amount of mine-rescue work being performed by the Bureau of Mines, ample material is being made for such accounts of human-interest performances as have interested the world in the Canadian police. An example is had in the performance of the Bureau of Mines crew at the recent explosion in a mine of the Union Collieries Co. at Renton, Pa. The incident as told by a man with long experience in mines but who is not connected with the Bureau of Mines is as follows:

"When we arrived at the mine they just had completed the repairs on the fan house and had rigged up a bucket and hand hoist preparatory to lowering three men to the bottom of the airshaft. We found that the so-called bucket was about large enough for a canary and its cage. It would have been absolutely unsafe to lower three men on this bucket. After George McCaa and Ed Denny, of the Bureau of Mines crew, looked the



situation over they suggested that only two make the first trip down. I will say frankly that, while I am usually willing to go anywhere anyone else will go in a mine, after I looked at the bucket and the condition of the airshaft I did not insist on being one of those to go down. I hoped I would not be selected for the first sacrifice, but McCaa and J. H. Zorn, another member of the bureau crew, insisted on making the first trip, while Denny and I should follow as reserves.

"McCaa examined the bucket and said, 'This bucket will not hold two. I will go down first alone. Zorn, you stay here with the others on the top.' In all my experience in mine disasters, I have never witnessed a finer example of courage or a more stirring sight than McCaa leaving the surface to descend 509 feet to the bottom of that shaft in a little bit of a bucket attached to a three-eighth inch wire rope. When he got down about twenty-five feet the bucket was spinning at twenty-five revolutions a minute. We stopped his descent, as we were afraid he would become dizzy. McCaa called up, asking that we pull the rope over to the side until he could catch hold of the guide. He made the rest of the descent hand over hand to prevent the twirling round of the bucket. He landed safely and began the work of restoring ventilation. This was done so successfully that not a man in the mine was over-come."

### Would Give Houses of Idlers to Workers

THE Connellsville Basin Coal & Coke Co., against which a strike has been in effect since early in July in an effort to compel that company to officially recognize the United Mine Workers, brought eviction proceedings in fourteen different suits in Monongalia County in the first week of August. The company took such action in order to secure quarters for fully half a hundred men which it has employed to replace the striking miners who have so far refused to give up the company quarters they occupy. The eviction suits were therefore the outgrowth of the strike.

The justice who heard the cases dismissed the suits on the ground that the tenants of the houses had not had sufficient notice to vacate. It was the justice's opinion that the tenants should have two weeks' notice instead of merely seven days, as actually given, inasmuch as the deduction from their pay for rent had been made every two weeks.

Despite the strike the Connellsville Basin company has been able to obtain enough miners to man its mines and the same is true as to the Penn-Mary Coal Co. as well as other companies on the Morgantown & Kingwood Ry. against which a strike has been declared. It is becoming more apparent each week that the strike is doomed to be a failure.

However, the United Mine Workers are not giving up without a struggle. Threats and rumors of threats are being utilized by the mine workers to keep miners away from the mines and to keep them in the ranks of the strikers, that being, as is already known, the policy pursued in southern West Virginia also.

Public sentiment along the line of the Morgantown & Kingwood Ry. is favorable to the coal companies and not the striking miners, for the companies are paying better wages than the union scale calls for. In many quarters the strike is regarded as a covert attack on the Bethlehem Steel Corporation, which owns the Penn-Mary Coal Co. The miners, though receiving benefits

from the United Mine Workers, are the principal losers.

Threats against miners who have remained at work reached a climax during the first week of August when Pat Blevan, a striking miner, formerly employed by the Connellsville Basin Coal & Coke Co., was arrested and given a hearing on Aug. 7, charged with threatening to kill Paul Utt, a loyal miner employed by the Penn-Mary Coal Co. at Richard, W. Va. Lewis Hamrick, another striking miner, also formerly employed by the Connellsville Basin company, was tried on Aug. 8 on a charge of committing assault and battery on Utt.

### Chemists to Discuss Fuel Problems

UNDER the chairmanship of A. C. Fieldner, supervising chemist, Bureau of Mines, Pittsburgh, a symposium on fuels is to be held at the American Chemical Society meeting in Chicago. This session will be under the auspices of the Division of Industrial and Engineering Chemistry on Thursday, Sept. 9, at 2 p.m. Coal men and other engineers interested will be welcome at this session, which will be held in the laboratories of the University of Chicago. The headquarters of the society are at the Congress Hotel, Chicago, for the entire period of the meeting, Sept. 6 to 10.

The following twelve papers will make up the program of the fuel symposium:

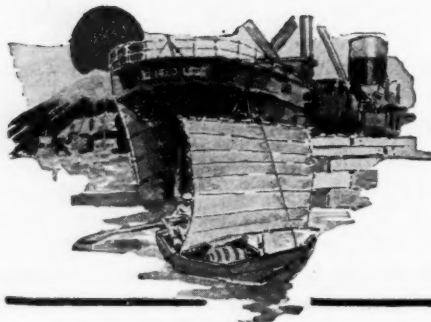
S. W. Parr—"Low-Temperature Carbonization." Edgar Stansfield—"Carbonization of Canadian Lignites." Henry Wreisinger—"Byproduct Coke, Anthracite, and Pennsylvania Coal as Fuel for Heating Houses." F. W. Sperr—"Byproduct Coking." G. A. Burrell and others—"The Charcoal Method of Gasoline Recovery." S. E. Sheppard—"Colloidal Fuels—Their Preparation and Properties." A. C. Fieldner and others—"Gasoline Losses Due to Incomplete Combustion in Motor Vehicles." J. B. Garner—"Enrichment of Artificial Gas with Natural Gas." Harry A. Curtis—"Commercial Realization of Low-Temperature Carbonization of Coal." H. C. Porter—"Fuel Conservation, Present and Future." Alfred B. Powell—"Some Factors Affecting the Sulphur Content of Coke and Gas in Carbonization of Coal." H. F. Yancey and others—"Distribution of the Forms of Sulphur in the Coal Bed."

### Reported Coal-Mine Fatalities During May Decreased 13 Per Cent

FATALITIES in and about coal mines of the United States, according to reports received by the Bureau of Mines from the state mine inspectors of all states except Kentucky, totaled 148 during May, 1920, as compared with 170 in the same states in May, 1919. Thus the 1920 figures show a decrease of twenty-two fatalities, or about 13 per cent, from the record of the corresponding month of last year. Based upon an output of 46,686,273 tons in May, 1920, the fatality rate is 3.17 per million tons produced.

During the first five months of 1920 the number of lives lost was 803, a decrease of 47 from the record of the corresponding months of 1919. The production of coal for these five months was 247,737,273 tons, an increase of 39,432,273 tons over the first five months of the previous year. Thus the fatalities have decreased 5.5 per cent, while there has been an increase of nearly 19 per cent in production.

The average number of lives lost during May of each year from 1913 to 1919 has been 178. The production of coal has averaged 46,723,000 short tons, showing a fatality rate of 3.81 per million tons as representative of the month of May for the last seven years.



## Foreign Markets and Export News



### Coal Output of Nova Scotia Decreases Slightly

Consul Charles M. Freeman, Halifax, reports that the output of coal from Nova Scotia, in which is located the greatest coal area of the Dominion, for the year 1919, as compared with 1918, is given by the different corporations as follows:

Companies	1918 Tons	1919 Tons
Dominion Coal Co. (Ltd.)	3,271,155	3,087,124
Nova Scotia Steel & Coal Co. (Ltd.)	502,818	552,044
Inverness Railway & Coal Co. (Ltd.)	204,495	138,387
Bras D'Or Coal Co. (Ltd.)	49,924	41,341
Port Hood Collieries (Ltd.)	2,521	20,176
Acadia Coal Mining Co. (Ltd.)	281,893	419,089
International Coal Mining Co.	181,624	173,761
Cumberland Railway & Coal Co.	369,105	374,315
Maritime Coal, Railway & Power Co.	188,454	161,427
All others	751,677	237,093
Totals	5,803,666	5,204,757

In the coal mines of Nova Scotia over 13,000 men were employed during the year, while in the quarries 600 found employment. The product of the quarries consisted of 48,868 tons of crude gypsum, 353,379 tons of limestone, 7,450 tons of building stone, and 300 tons of grindstones.

The amount of coal shipped to the United States from the collieries of

Cape Breton was 75,813 tons as compared with 269,080 in 1918 and with 486,000 in 1913—a decrease of nearly 200,000 tons as compared with 1918 and over 400,000 compared with 1913. The reasons for this decrease are the greater consumption of the steel plants,

the lesser production caused by labor troubles, and the constantly increasing demand for bunker coal for steamships. During the past year, and for the first time on any extended scale, coal has been shipped from Cape Breton to the European markets. The Netherlands Government has contracted for a large quantity delivered on board at Sydney and Louisburg.

### British Purchase American Coal To Supply Italian Trade

British coal exporters are serving their former Italian customers by the purchase of coal for Italian account in the American market, according to authoritative reports received by Government offices here from agents abroad.

The operations of the British dealers were described as follows:

A British firm having offices in the United States goes into the open market and buys coal. Up to this point he possesses no advantage over the American broker. The coal, however, is shipped in British bottoms and profits on the transaction are figured more on the basis of freight than on the resale of the coal at a higher price.

"The great advantage possessed by the British in this field," said the report, "is derived from their long experience in the game; they know all the ins and outs of the business. They hold their old customers through making easier terms—that is to say, the British sell on the old Welsh charter, under the provisions of which one-third of the freight is paid down when the contract is signed and the remainder paid when the ship reaches its destination."

Often from two to three months' credit is given the Italian customer, with a discount allowed if cash is paid

on delivery, it was said. It is through these devices that the British are using our raw material to conserve their traditional grip on the Italian coal market.

With the recent development of our merchant marine up to the point where American bottoms are becoming adequate to take care of our entire seaborne trade, there is no reason in the world why American coal should be sold to Italy by British middlemen. As long as our American coal exporter demands cash against shipping documents and pays no attention to the question of transportation profits, he stands to lose in the long run as a competitor with the British for the Italian coal trade.

### Belgium Gets Large Coke Supply

There is a more plentiful supply of coke in Belgium, according to the *Colliery Guardian*, arrivals by canal from the Ruhr having of late been ample for the needs of the furnaces now operating in the Liège district, and a surplus has been going to the Charleroi area. From July 1 to 15 9,105 tons of coke and 11,355 tons of coking coal were received from the Ruhr. The distribution of coal continues to be a pressing question in Belgium. There is some weakness in iron and steel prices at the moment, buyers holding off.

### Holland To Get German Coal— Conditionally

The German Government officially announces that it will not repudiate the credit and coal agreement with the Netherlands, but that its ability to deliver the coal will depend upon the Allies' attitude.

### New Prices Announced for German Coal

The following new selling prices for German coal have been officially announced:

Lower Silesian Coal Syndicate—Waldenburg coals: large, 284 mk. per ton; screened cubes, 284 mk.; screened peas, 270.5 mk.; screened through and through, 282.5 mk.; unscreened, 278.7 mk.; sludge, 98.4 mk. Neurode coals: Coke breeze, 120.5 mk.; briquets, 490 mk.

Rhenish Brown Coal Syndicate—Briquet waste, 43.1 mk.; dust, sludge and through and through, 39.2 mk.

Bavarian Right Rhine Coal Syndicate—Schwandorf coals: Through and through, 73.5 mk.; screened through and through, 91.2 mk.; briquets, 219 mk.; sludge, 98.4 mk. Neurode coals: tank coal, 103.9 mk. Schwidg-Schwarzenfeld coal: Through and through, screened, 106.8 mk.; briquet waste, 114.1 mk. Dettingen coal: Screened through and through, 93.1 mk.; briquets, 293.4 mk.; briquet waste, 207.4 mk.; settling-tank coal, 104 mk. Ibenhausen-Regensburg coal: Through and through coal, 115.1 mk.; screen, 142 mk.

### New South Wales' 1919 Output Shows Slight Decrease

According to the annual report of the Department of Mines for 1919, the total quantity of coal mined in New South Wales in 1919 amounted to 8,631,554 tons, being a decrease in tonnage of 431,622 in comparison with the previous year. The collieries in the Northern district supplied an output of 5,629,253 tons, as compared with 5,966,926 tons in the previous year. The Southern district furnished an output of 1,826,574 tons, as against 1,984,578 tons in 1918. The production from the Western district amounted to 1,175,727 tons, as compared with 1,111,672 tons in the previous year.

The average prices of coal per ton in the three districts named were as follows, in 1919: Northern district, 13s. 5.81d.; Southern district, 11s. 9.64d. Western district, 9s. 4.19d.

The quantity of coke produced in 1919 amounted to 424,773 tons as compared with 608,492 tons.



# News from the Capital

By Paul Wooton



## Chicago Asks Coal Priority

A DELEGATION representing the Independent Coal Dealers' Association of Chicago called at the White House, Sept. 1, seeking a priority order to insure adequate coal supplies for that city, both for industrial and domestic use. The committee talked with Secretary Tumulty, saying that because of the general situation and the priority orders Chicago was short of coal and the city was threatened with a shortage for both domestic and industrial consumption. Mr. Tumulty advised his callers to confer with the Interstate Commerce Commission, promising to lay the case before that body for consideration.

## Commerce Commission Gathers Data on Effect of Tidewater Movement on Prices

IN ACCORDANCE with a resolution of Senator Walsh, of Massachusetts, adopted during the closing hours of the last session of Congress, the Interstate Commerce Commission is making an investigation of the movement of bituminous coal and anthracite coal to tidewater and the effect of such movement on coal prices. The commission has sent a questionnaire to large coal consumers throughout the country asking them to furnish data as to the price paid for coal during the month of July, 1920 and 1919. They are asked to furnish information as to the amount of bituminous and anthracite coal purchased in net tons, both contract and spot, during this period and the average price per ton at the mines and the cost delivered. They are also asked to give the quantity of bituminous coal on hand July 31, 1920 and 1919.

## Ohio Consumers Report Shortage Because Of Service Order 10

ARGUMENTS presented by representatives of Cleveland and Akron, Ohio, to support their application for a modification of Service Order No. 10 failed to impress the Interstate Commerce Commission. The Lake Order was blamed for the inability of domestic consumers in the Ohio cities to obtain supplies for winter storage. It was contended that Canada is being accorded much better treatment in the matter of coal supplies than are American cities and that certain coals suitable for domestic fuel and which are not desired in the Northwest are being forced into the Lake movement by Service Order No. 10.

Commissioner Potter, during the course of the hearing, stated that the question in his mind is whether or not it is within the power of the commission to grant an embargo such as the Lake order. There is a question, he said, as to whether Congress has the power to delegate any such power to the commission, but he agreed that this is no time to quibble over the extent of authority of the commission.

The Ohio witnesses could not present comprehensive figures to prove their contention that Canada is getting a disproportionate amount of coal. There seemed to be no objection to the policy of the commission to regard Canada as a part of the United States so far as coal distribution

is concerned. They stated that it is not a question of allowing one to suffer and the other to have an ample supply of fuel but that each should suffer equally. It was contended that coal is being forced into Canada and the Northwest without a real methodical apportionment of the coal among all consumers.

It also was stated that Service Order No. 10 allows the Northwest to buy coal cheaper than it can be bought in Ohio. This was denied by J. E. McGee, who pointed out that \$7 coal at the mine means \$17 coal at Minneapolis.

## Spring Valley Company Objects to Proposed Illinois Coal Rates

IN A brief filed with the Interstate Commerce Commission the Spring Valley Coal Co. takes exception to the report proposed by Attorney-examiner A. R. Mackley in a case involving Illinois coal rates. The brief says the examiner errs in the following particulars:

In ordering an increase only to a minimum of 85c. in the differential of 70c. per net ton heretofore observed from southern Illinois group over the Third Vein group to interstate differential territory. The proposed differential is said to be insufficient.

In stating that the carriers have justified the reasonable rates of the intrastate rates on coal in Illinois from Aug. 8, 1919, to Feb. 29, 1920.

In failing to require an increased spread in the interstate rates as between northern Illinois mines and southern Illinois mines to destinations in the Chicago switching district to which the routes are interstate.

## Advises Against Demanding Assigned Cars For Coal To Be Stored

THE demand by some public utilities for assigned cars for coal for storage purposes is being discouraged by George W. Elliott, their representative in Washington. He does not believe that it is wise to press such a demand until the requirements of the Northwest and New England shall have been met. Mr. Elliott is calling the attention of the Department of Justice to the cases where public utilities are forced to pay what they consider unfair prices for their coal.

## Navy Raises Coal Prices To Meet Recent Wage Advance

THE Navy Department has advanced the prices of coal which it will purchase in West Virginia and Pennsylvania, in consideration of increases in cost of mining other than wages. Hereafter the department will pay \$4 per gross ton, f.o.b. mine for West Virginia coal instead of \$3.64 previously paid and \$4.25 per ton for Pennsylvania coal instead of the former price of \$3.90. The department considers the new prices will afford just compensation to the operators and will pay them under commandeering orders, having failed to get satisfactory bids.

## Indiana Operators Taxed 1c. Per Ton to Defray Coal Commission Expenses

**JESSE E. ESCHBACH**, head of the Indiana Coal and Food Commission, is sending notices to coal operators of every class in Indiana informing them of the tax of 1c. a ton on all coal mined in Indiana. The tax for August is due in the office of Otto L. Klauss, Auditor of State, who is a member of the commission, by Sept. 10. The money so collected is to be used to defray the expenses of the commission.

## Traffic Congestion, Due to Lack of Ships, Causes Suspension of Order No. 11

**L**ACK of ships to handle the volume of coal being dumped at North Atlantic ports for shipment to New England, under Service Order No. 11, has caused such a congestion of coal cars at those ports that the Interstate Commerce Commission on Aug. 31 ordered a five-day suspension of the order, effective beginning Sept. 3.

The commission's action made available during the rest of the week about 500,000 tons of bituminous coal for distribution in the region along the Atlantic seaboard from Norfolk to New York City.

Another result of the suspension was to provide a considerable quantity of soft coal in the region that will be affected by the "outlaw" strike of the anthracite miners. The total movement of coal by water to New England since July 1 has been about 3,800,000 tons. The public utilities in New England are understood to have reserve supplies of coal on hand now that are sufficient to meet their requirements for two to four months.

A survey of the supply of coal in the New England States by the Geological Survey shows that the industries and factories of Maine have an average supply of six weeks and two days on hand. In New Hampshire the average supply is sufficient for five weeks and one day. In Vermont the supply aggregates the needs for eight weeks and six days. In Massachusetts the average supply is five weeks and two days. In Connecticut it is four weeks and two days and in Rhode Island six weeks and one day.

The investigation of the Geological Survey covers the coal supplies of 31,640 factories and manufacturing plants. The supply of the New England States is greater than in any other States with the exception of South Carolina, Louisiana, Wyoming and California.

The movement of coal into New England through the Hudson River gateways in the last eight weeks has approximated 6,000 cars a week. In some weeks the number has exceeded 7,000 cars.

The temporary rescinding of the order was issued in the form of an amendment, as follows:

It appearing that by reason of the operation of Service Order No. 11 of the commission, entered July 26, 1920, a large quantity of bituminous coal has been transported to the various North Atlantic ports enumerated in said order, which has not been transported by water to New England, and now remains and is held in railroad cars at such ports, and that undue delay to the rail equipment is caused by the continuing transportation of coal under Service Order No. 11 to such ports, and that sufficient water bottoms are not at such ports or expected to arrive, so that the coal in cars now at such ports can be discharged without undue delay:

It is ordered that the operation of said Service Order No. 11 be, and the same is hereby suspended, and that said order shall not be in force or effect for the period of five consecutive days from Sept. 2 to Sept. 6, 1920, both inclusive, and that thereafter said order shall be in force and effect unless otherwise ordered by the commission.

It is further ordered that copies hereof be served upon the carriers upon whom Service Order No. 11 was served, and that notice hereof be given to the general public by depositing a copy of this order in the office of the secretary of the commission at Washington, D. C.

## Stocks of Bituminous Coal in Hands of Industrial Consumers

**F**INAL figures of the Geological Survey's canvass of stocks of coal, embodying supplies held by industrial plants, other than steel mills and byproduct coke ovens, expressed in terms of weeks' and days' supply, are presented herewith together with such comparable past data as are to be had. Because of the limited time available the inquiry was restricted to a list of representative consumers—the 2,589 plants reporting use about 40 per cent of the total fuel consumed by the group from which they were selected.

### BITUMINOUS COAL ON HAND AT INDUSTRIAL PLANTS OTHER THAN IRON AND STEEL MILLS AND BYPRODUCT COKE OVENS

(Figures represent weeks and days at the rate of consumption at time of stock-taking.)

	July 15 1918 a	Oct. 1 1918 a	Nov. 11 1918 a	Jan. 1 1918 a	Apr. 1 1919 b	Mar. 1 1920 c	June 1 1920 c
Maine.....	17-3	23-0	23-5	22-3	12-2	5-6	6-2
New Hampshire..	21-0	30-4	27-3	24-3	20-0	7-6	5-1
Vermont.....	20-0	26-0	26-2	20-5	13-4	8-2	8-6
Massachusetts..	14-0	22-6	21-2	19-3	14-2	6-2	5-3
Connecticut.....	11-2	19-2	18-5	16-2	10-5	5-5	4-2
Rhode Island....	12-0	20-1	19-4	16-6	13-4	6-4	6-1
New York.....	6-1	12-2	12-4	11-1	8-4	3-2	3-0
New Jersey.....	10-1	13-2	13-0	11-2	7-3	4-5	4-5
Pennsylvania....	5-2	6-3	6-5	6-2	4-1	2-3	2-5
Maryland.....	5-6	7-2	7-4	6-3	2-6	2-6	2-3
Delaware.....	11-0	11-1	11-6	12-1	8-0	5-2	6-0
Dist. of Columbia	2-4	4-0	4-6	4-6	4-1	1-6	1-1
West Virginia...	2-5	3-3	3-5	3-1	2-4	1-6	1-6
Ohio.....	7-1	8-3	8-2	7-1	4-1	2-3	2-3
Indiana.....	6-3	8-0	8-3	7-0	5-0	3-0	3-0
Illinois.....	5-0	7-2	7-6	6-6	4-1	2-5	2-1
Michigan							
Northern Penin- sula.....	8-2	31-6	34-0	28-3	13-1	19-4	9-1
Southern Penin- sula.....		14-4	12-6	11-0	5-5	2-0	2-6
Wisconsin.....	5-1	12-5	12-2	9-4	5-3	4-1	2-5
Minnesota.....	7-5	9-1	8-4	7-2	9-1	7-4	4-6
Iowa.....	4-5	5-2	5-5	5-4	4-1	2-1	2-1
North Dakota....	3-2	2-2	2-1	3-1	1-6	2-1	1-6
South Dakota....	5-0	5-2	13-0	12-5	5-4	8-5	4-2
Nebraska.....	4-6	6-3	4-6	3-0	2-0	2-6	2-4
Virginia.....	4-0	4-2	4-0	6-1	5-4	2-6	3-6
North Carolina..	9-0	11-5	11-4	11-1	9-1	6-2	4-6
South Carolina...	9-1	11-4	11-6	10-4	8-1	6-3	7-3
Georgia.....	8-3	10-2	10-3	9-0	7-1	7-1	4-6
Florida.....	3-3	9-5	11-4	7-1	5-3	2-5	2-6
Kentucky.....	4-0	5-4	6-3	5-3	3-1	2-3	2-3
Tennessee.....	5-3	7-1	6-1	5-5	4-3	3-5	2-6
Alabama.....	5-0	8-4	9-2	6-3	4-6	3-2	3-0
Mississippi.....	10-0	10-0	8-4	7-0	2-3	5-5	4-6
Missouri.....	4-4	5-7	6-6	5-5	4-1	3-1	2-3
Kansas.....	3-4	4-7	6-1	5-2	3-5	3-1	3-2
Oklahoma.....	12-0	10-6	12-2	9-6	12-5	8-4	9-2
Arkansas.....	11-0	7-6	7-3	5-1	4-5	4-0	3-3
Louisiana.....	5-3	8-3	9-5	8-6	4-0	7-6	10-0
Texas.....	4-0	3-3	2-6	2-4	0-6	1-5	1-0
Colorado.....	7-0	10-3	6-4	6-1	8-0	4-6	5-2
New Mexico.....	5-2	6-3	6-6	9-5	9-3	5-1	8-3
Arizona.....	7-0	5-6	7-1	9-2	10-6	7-2	7-4
Utah.....	5-0	11-0	6-4	6-5	6-3	5-0	3-4
Nevada.....	6-0	9-2	9-5	9-1	4-3	4-2	3-1
Wyoming.....	7-0	Large	Large	3-6	8-1	6-3	29-3
Montana.....	5-5	6-3	5-4	6-1	5-0	5-3	5-6
Idaho.....	?	Large	6-1	8-1	5-4	4-5	3-3
Washington.....	5-4	6-0	5-4	5-6	3-0	4-3	4-1
Oregon.....	8-0	7-5	6-3	5-5	9-0	4-6	3-1
California.....		22-6	21-5	21-3	26-1	13-6	15-0
Totals.....	6-6	10-1	10-1	9-1	6-5	3-6	3-3

(a) Based on compulsory weekly consumption and stock reports to the United States Fuel Administration. About 31,640 plants reported regularly.

(b) Based on reports from 2,347 representative consumers. Supply calculated on basis of average weekly consumption in January, February, and March, 1919.

(c) Based on reports from 2,589 representative consumers. Supply calculated on basis of average weekly consumption in March, April, and May, 1920.



## Trade Board Review Reports Improvement in Movement of Coal

**I**N ITS review of general business and financial conditions during August the Federal Reserve Board says that there is still a shortage of coal in various parts of the country, not for immediate needs but as compared with the estimated demand of coming months. Congestion on the railroads is gradually yielding to special effort to relieve it and more progress has been made in moving coal than any other product; in fact, the coal movement has shown a steady gain since the recent orders of the Interstate Commerce Commission.

In the Cleveland district Lake trade coal shipments are improving and there is a steady gain in coal movement to be noted all around. The Philadelphia district reports that there has been no reduction in prices for spot coal and that the new freight rates are expected to add from 65 to 85c. a ton to the cost of anthracite to the retailer.

In the Atlanta district coal production shows a little improvement but strikes are still on in various fields. Coke production is below the demand and car shortage is still felt. Movement of bituminous coal to New England has been improved in order to relieve the shortage which threatened in that section. There was a large movement of cars during the late July and early August to the New England factory region, including both bituminous and anthracite. It is expected that distribution will improve steadily from this time forward.

## Another Suit Attacks Constitutionality of Indiana Coal Commission Act

**A** SUIT attacking the constitutionality of the Special Food and Coal Commission Law enacted by special session of the Indiana Legislature, and seeking a temporary injunction to prevent operation of the act, was filed in Federal Court Aug. 26 by E. E. Heller & Co., coal retailers of Indianapolis. Governor James P. Goodrich, Jesse E. Eschbach and Otto L. Klauss, who are alleged to be "pretending to be members of and constituting the Special Food and Coal Commission of Indiana," are made defendants.

The suit is similar in form to one filed several days ago by the American Coal Mining Co., of Bicknell. It is understood that the Indiana Retail Coal Merchants' Association is back of the suit filed today, and it is also said that the Indiana Bituminous Coal Operators' Association is backing the suit filed by the American Coal Mining Co. Both suits attack the constitutionality of the act and ask temporary restraining orders and permanent injunctions to prevent operation of the act, if it is held void.

The operators' suit is to come before Judge Francis E. Baker, of the Circuit Court of Appeals, in the absence of Judge A. B. Anderson, of the District Court, about Sept. 7 or 8, for preliminary hearing. Local attorneys declare both cases to be "three-judge" cases, and say that litigation probably will be prolonged even before a restraining order can be issued. The preliminary hearings will be before Judge Baker, but he alone will be unable to issue a temporary injunction, legal authorities say. Judge Anderson is on vacation,

and will not return until late in September. The cases may not be set for final hearing until after his return. In the meantime, attorneys point out, the coal commission will have ample opportunity to operate under the law, fix prices, and, in the absence of restraining orders enforce its order.

Attorneys for Heller & Co. are Clarence W. Nichols and Matson, Kane & Ross. State officials and attorneys have been conferring on a plan of defense in the suit. In the conference were Jesse E. Eschbach, head of the commission; Ele Stansbury, Attorney General, and Ferdinand Winter and James W. Noel of counsel.

Monday, Sept. 6, has been set for a preliminary hearing of the American Coal Mining Co.'s suit. The two circuit judges and district judge who will come to Indianapolis for the hearing are Judge Francis E. Baker, of Chicago; Judge Evan A. Evans, of Baraboo, Wis., both of the Seventh U. S. Circuit Court of Appeals, and Judge Ferdinand A. Geiger, of the eastern Wisconsin U. S. District Court.

## Try to End Sub-Contracting by Dynamite

**T**ROUBLED by the prospect that the strike against sub-contracting at the mines of the Pennsylvania Coal Co. may be ended by the return of individual men to work, persons believed to be strikers have dynamited the homes of Samuel Latore and Michael Condoso and have hanged effigies in front of the homes of six more company employees labelled "Beware of the strikers" and "Guess what you will get next." Many of the men thus warned are outside men at the collieries. They have no connection with sub-contracted work. Samuel Latore's brother, Steve, is a contract miner, and it is believed that his relationship made him the object of this attack which broke the windows, hurled a door from its hinges and threw the occupants out of their beds. The state police is actively searching for the miscreants.

## Howat's Case to Go to Supreme Court

**F**OILED in his attempt to get the Kansas Supreme Court to order a rehearing of their case charging them with contempt of the Industrial Court, Alexander Howat and three other officials of the United Mine Workers, District No. 14, have appealed to the United States Supreme Court. In consequence the judges of the Kansas Supreme Court granted him on Sept. 2 a ten-day stay of execution to allow him to prepare an appeal to the federal authority. The Kansas decision was delivered on Sept. 1. It will be remembered that Howat and his staff refused to appear and testify before the new Court of Industrial Relations established in the State of Kansas for the purpose of averting or ending strikes.

## Indiana Coal Production Increases as Car Service Improves

**P**RODUCTION of coal at 193 mines in Indiana during the week ending Aug. 28 is reported as 319,214 net tons as compared with 281,485 net tons the week preceding. These mines worked 44.81 per cent of full time. Labor trouble was responsible for 49.65 per cent of the time lost, while car shortage and mine disability accounted for 4.49 and 1.55 per cent, respectively.

## End of Anthracite Strike Near

Belief Exists That President Will Favor New Anthracite Conference if Men End "Vacation"—  
Some Return to Work

HOPE has been revived that the mine workers of the anthracite region will return to work in the expectation that as soon as they take up their tools President Wilson will call for a reconsideration of the terms of the wage contract as he did in the case of the bituminous mine workers. The concessions granted the soft-coal men widen the differential between the hard- and soft-coal fields and make advances to the men in the former more likely.

At first it was believed that the strikes were largely the outcome of union insurgency and were staged merely to upset the present official incumbents of the United Mine Workers—an idea quite naturally arising, for the strike commenced when 300 insurgent leaders representing sixty-five out of 125 unions in District No. 1 met at Wilkes-Barre, on Sept. 1 and voted unanimously to take a "vacation" until their demands were granted. Enoch Williams is their leader, and he has consistently stated that President Wilson must call for a resumption of negotiations and the mine workers must be represented by a committee in which the insurgents have confidence or the men will not return to work.

So general did the "vacation" become, among men who were not in any way affected by insurgency, that the idea that the movement was one to make a revolution within the union has long since died. The men, it is well known, expected large gains in wage from the expected action of the Anthracite Coal Commission and did not in any way regard the submission of its case to that tribunal as a forlorn hope, which could not make their fortune any worse and might possibly make it better. Long dwelling on their demands has made them disposed to believe that anything less than what they seek would mean for them a plight not to be endured.

### OVER HALF THE MINES IDLE AT ONE TIME

As a result they quite generally went on "vacation." With the union leaders denying their right to quit work, the men did not venture to call it a strike. It seems possible that the "vacation" will be short. It certainly was for a time widespread, shutting down, it is said, 180 out of 300 collieries and perhaps 100,000 out of 175,000 men, though it was denied in Washington that more than 60,000 men were involved. The number is hard to determine as many mines which continued to work did so with reduced forces.

Apparently the collieries north of Scranton between Scranton and Carbondale were less affected than elsewhere, the height of the "vacation" being reached in the Wyoming Valley, Hazelton and the Schuylkill fields. On Sept. 4 eighteen collieries in District No. 1 voted to go back to work, Buttonwood, Avondale, Lance No. 11, Peach Orchard and Nos. 3 and 4 shafts of the Pettebone Colliery being in that list. On the same day Pine Ridge and Cayuga collieries in the Scranton region that had been kept working were closed down because of a lack of men to keep them in passably effective operation. By Monday, Sept. 6 (Labor Day) many more unions had decided to return to work and the insurgents of District No. 1 had called a meeting to consider whether they would continue the struggle. The largest defections were at the mines of the big companies. Most of the independents continued to operate with, however,

greatly reduced forces. The insurgents made efforts to call out the pumpmen and engineers, thus hoping to do considerable damage to the properties—such injury as would prevent any early resumption of work. However, there has not been any picketing or violence, probably because the "vacationists" feared they would be subject to state or federal laws in interfering with the production of coal.

The mine workers want 15 per cent further increase for contract miners and an advance of \$2 per day for company men. John T. Dempsey, president of District No. 1 is to be retired for neglect of duty, and John Collins, of Nanticoke, who is vice-president takes his place. John Collins, who has a strong following among the miners, will call on the mine workers to return to work in obedience to the Tri-district's agreement that it would accept the terms of the Anthracite Coal Commission as soon as those terms should be declared.

No pay under the retroactive clause is being given to the "vacationists" until such time as they show a disposition to obey the terms of the decision, the operators arguing that if the mine workers will not accept its terms, it would be unfair to require the mine owners to do so. The contract, which embodies the Commission's award was signed at Scranton by the union leaders, though they protested its terms were far less generous than the mine workers believed they were entitled to receive.

## Pittsburgh Daymen Get Wage Advance

APPROXIMATELY 10,000 men participate in the wage increase granted by the Pittsburgh Coal Producers Association at a meeting with the officials of District No. 5, held in the Farmers Bank Building of Pittsburgh on Aug. 31. Under this agreement the day men get an increase of \$1.50 per day and the trapper boys, crippled and old men doing "less than men's work," receive an increase of 82c. These advances are made retroactive to Aug. 16 last. Inside men now receiving from \$5.75 to \$6.10 a day will now get \$7.25 to \$7.60 a day; outside day men now paid from \$5.10 to \$5.60 a day will receive from \$6.60 to \$7.10 a day and trapper boys whose recompense was \$3.18 will now be raised to \$4. The miners do not receive any increase.

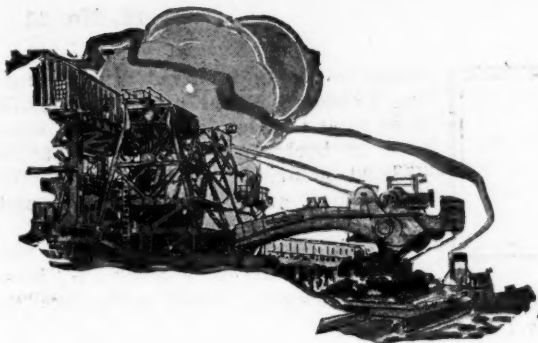
## Union Declares Strike in Alabama

ALLEGING that the operators of Alabama are not paying the wage granted by the Bituminous Coal Commission of last March, John L. Lewis, international president of the United Mine Workers of America, on Sept. 1 declared a general strike in the coal fields of Alabama. For a long time work has been suspended in many of the mines of that state, especially among those mining domestic coal.

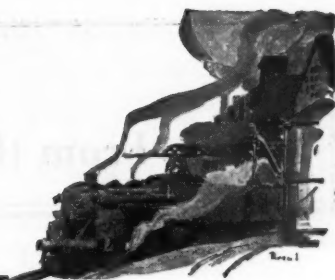
To avert this strike Governor Kilby has appointed a commission of three representative citizens, George H. Denny, president of the University of Alabama, James J. Mayfield, former Supreme Court Justice and now Coal Commissioner, and C. E. Thomas, banker and stockman. He has invited J. R. Kennemer, president of District No. 20 (Alabama) to withhold the call for a general strike pending the investigation of this committee and its report.

He has also called on the railroads that serve the coal mines to assist in averting the coal shortage by furnishing a sufficient number of cars to haul the coal mined.





# Production and the Market



## Weekly Review

*Production Gains—Midwest Section Demand Lively—New England Priority Is Temporarily Suspended—Prices Decline Further—Export Shipments Slump—Anthracite Settlement Is Seen*

**T**HE week ended Aug. 28 showed a partial recovery, when bituminous production exceeded the 11-million-ton mark. Figures of the Geological Survey place the week's output at 11,374,000 net tons, an increase of 3 per cent or 326,000 tons over the preceding week. The recovery is the more significant when it is recalled that during the early period Indiana labor troubles were greatly hampering production.

A substantial increase in total production is indicated by late reports. The Midwest is experiencing some new labor disturbances, a number of Illinois and Indiana mines being down by reason of local strikes. It is believed this trouble will be short-lived, as operators and miners are proceeding to patch up their differences.

Anthracite production increased to 1,800,000 net tons as compared with 1,595,000 tons for the third week of August. Production of beehive coke decreased slightly, total output being estimated at 412,000 net tons, a loss of 3 per cent.

In the Midwest poor car supply lowered production created a lively demand and further advanced

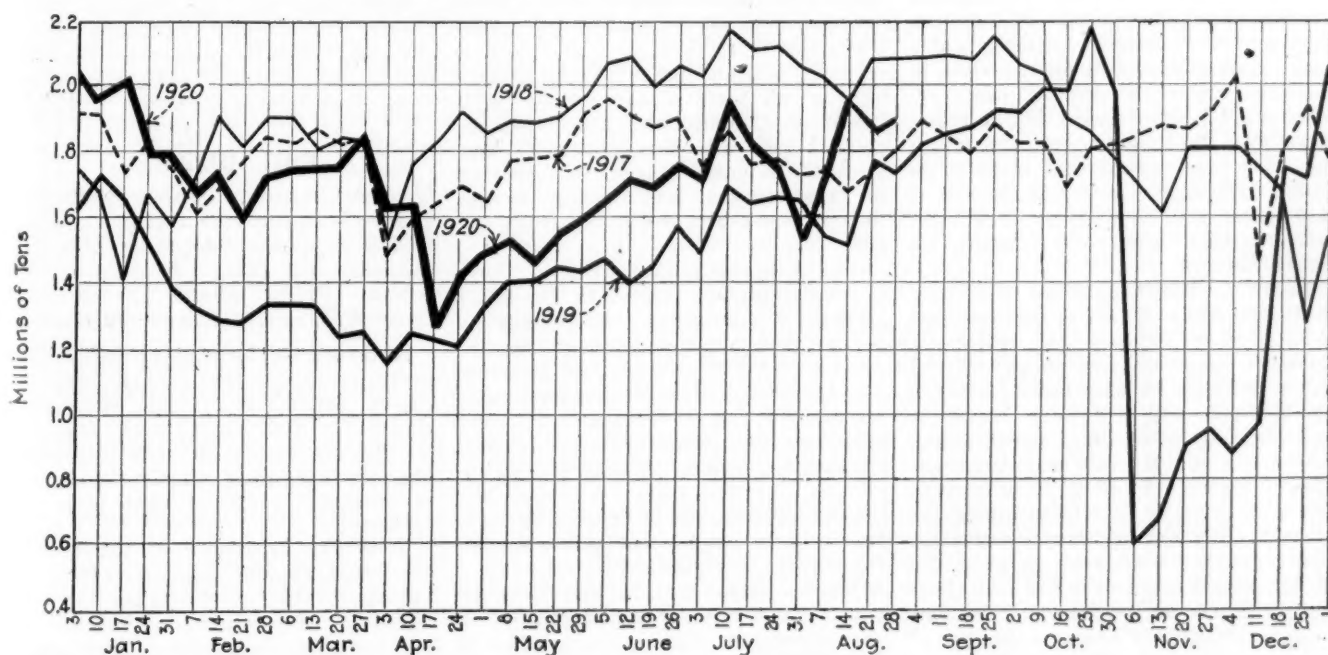
prices. Elsewhere, the improved car placements and labor situation were responsible for a continued price decline. Ohio cities are urging modification of the Lakes priority order, which is making local supply a difficult matter, and it is claimed that continued heavy Lake shipments are no longer necessary.

Lake dumpings of cargo and vessel fuel for the season including week ending Aug. 28 were 10,965,665 tons, about five million tons short of the 1919 dumpings for the same period.

Rail movement to New England continued its recovery, 5,792 cars being forwarded through the week. Shipments by Tide amounted to 345,000 net tons, or an increase of 137,000 tons over the preceding week. Congestion at ports was partly responsible for a 5-day suspension of the priority order. Exports declined to 530,000 net tons.

A possible reopening of the anthracite wage question is expected to end the miners "vacation" which practically put a stop to hard-coal production on Sept. 1.

Average Daily Production of Bituminous Coal\*



\*From weekly report of Geological Survey.

## Reports From the Market Centers

### New England

#### BOSTON

*Prices Recede Still Further—Movement All-Rail in Good Volume—Pier Congestion Causes Suspension of Priority—Hampton Roads Up on Contracts—Renewed Anxiety Over Anthracite.*

A less active market has caused a further decline in spot prices. All-rail grades from Central Pennsylvania have been quoted as low as \$8 at the mines, while for shipment to Tidewater Fairmont coal has sold down to \$6.50. These are the lowest spot prices known here since the latter part of May and indicate the extent to which the New England situation has improved.

Receipts all-rail are holding well up to the August average. The four or five day slump in mining that can be looked for in most districts over Labor Day will result in decreased movement the next week or ten days.

Plants have been able to build up a 60 to 90 days reserve, due partly to improved deliveries and also to a very pronounced manufacturing curtailment. From some of these manufacturers have come intimations that they might not need all the coal purchased earlier in the year. Even at contract prices plus the new rates all-rail coal will inventory so high that many buyers will plan on running into next season with as light stocks as possible.

There is little interest in current offering of coal by water. Wholesalers have found it difficult to make sales f.o.b. loading port and do not care to take the chance of sending coal forward unsold. Pier congestion at Baltimore and Philadelphia resulting from the poor handling of coal shipped on Order 11 has caused a suspension of that order for five days. It is significant that this has caused no concern here.

Hampton Roads agencies who took contracts early in the year are now able to show 100 per cent deliveries. Contract buyers have been offered extra tonnage on contract. Despatch at Norfolk and Newport News is excellent. At points like Lowell, Mass., where the all-rail rate has been advanced from \$4 to \$5.70, it is easy to see that even \$8 coal f.o.b. mines for all-rail shipment is more expensive than smokeless coals sold per gross ton at figures not much over \$12 f.o.b. Boston, Portland, or Providence. The new rates will probably induce a number of consumers to look to water coal next season as it is unlikely that water rates will show such proportionate advance.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	\$6.75@ 9.00	\$7.50@ 9.50
F.o.b. Philadelphia, gross tons	10.20@12.75	11.00@13.23
F.o.b. New York, gross tons	10.65@13.25	11.50@13.75

**Anthracite**—The "vacation" strike has caused renewed anxiety. Shipments have been slowing up not alone because of embargoes but because of reduced output.

The originating companies advanced prices again Sept. 1, the increase being 10c. in most cases. This makes the f.o.b. mine price \$7.85 per gross ton for stove size, while independents are quoting the same size \$12@14.50 f.o.b. mines.

### Tidewater

#### NEW YORK

*Deliveries Are Short—Operators Add Monthly Advance and Retailers Increase Prices—Bituminous Slumps, but Reaction Is Expected Because of Anthracite Suspension—New England Priority Suspension Will Benefit Local Market.*

**Anthracite**—The retail situation in this city has now become aggravated. Dealers have complained of the lack of receipts and have urged quicker shipments if trouble is to be avoided. They are now about 40 per cent behind scheduled delivery to Sept. 1.

The "vacation" taken by the miners because of their dissatisfaction with the Wage Commission's award has increased the calls for deliveries. But most of the yards are nearly empty of the sizes needed and dealers do not look for any big improvement in the near future.

The wholesale market is active. There is not enough coal coming to Tidewater to meet requirements. There was no let-up in demand because of the increased freight rate or the 10 cents per ton added cost of domestic coals on Sept. 1. It is expected that the operators will soon announce a new schedule of prices to conform to increases in wage scale. Although the dealers are anxious for coal they hesitate to pay the present prices quoted for independent product.

Buyers from Canada and Western points continue to offer excessive prices for shipments. Local quotations of \$13 @ \$15, alongside were made for cargoes of domestic sizes.

The steam coals are active. Buck-

wheat is strong with quotations ranging \$5.50@ \$6 at the mines; rice \$3.75 @ \$4.25 and barley is easy at \$3. Cargoes of buckwheat were quoted \$8.60 @ \$8.90 alongside; rice around, \$6.75 f.o.b. piers and \$7.25 alongside, and and barley \$4.75 alongside.

Quotations for company coals, per gross ton at the mine and f.o.b., New York Tidewater, lower ports are as follows:

	Mine	Tidewater
Broken.....	\$7.60@7.75	\$10.21@10.36
Egg.....	7.60@ 7.75	10.21@ 10.36
Stove.....	7.85@ 8.10	10.46@ 10.71
Chestnut.....	7.90@ 8.10	10.51@ 10.71
Pea.....	6.10@ 6.55	8.57@ 9.02
Buckwheat.....	4.00@ 4.25	6.47@ 6.72
Rice.....	3.00@ 3.50	5.47@ 5.97
Barley.....	2.25@ 2.50	4.72@ 4.97
Boiler.....	2.50@ 2.75	4.25@ 5.22

Quotations for the domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

**Bituminous**—With plenty of coal to meet current needs and with demand easy there was a further slump in prices. A continuance of the trouble in the hard coal fields is expected to drive bituminous prices upward. This may be overcome, however, by the temporary diversion of New England coal shipments to this city.

There was an accumulation of coal at the local docks due to the falling off in orders from New England. This congestion is expected to be relieved by the suspension of the New England priority order.

Wholesale dealers reported a slump in inquiries from manufacturers due to an accumulation of stocks or because of the curtailing of factory operations.

The withdrawal by the Shipping Board of all bottoms and a plan to place additional penalties for delay of coal at Tidewater, caused some confusion here. A meeting of the dealers affected was called for Sept. 3 to take whatever action thought best.

Quotations for the various pools showed considerable variation, prices ranging \$12@ \$15 alongside. Pools 10 and 11 were quoted \$8@ \$9 f.o.b. mines, with stray quotations down to \$7.50.

### PHILADELPHIA

*Miners' "Vacation" Upsets Anthracite Trade—Consumers Quickly Absorb Visible Supply—Steam Prices Are Unchanged, but Little for Sale—Bituminous Prices Recede Temporarily Only—Consumers Look for \$6 Coal.*

**Anthracite**—The retail trade has been badly upset by the miners' walkout. About two-thirds of all operations closed for the entire week has left the dealers here with very little coal. Most of them were quickly cleaned out of whatever prepared sizes they had on hand.

With the beginning of the trouble the trade became clamorous for coal, buyers showing a willingness to take any size. It was not long before even pea coal was well taken. The operators hope that wiser heads will prevail among the workers and that the "vacation" will be short-lived.



The larger companies sent out notices, which amounted to about the usual 10c. monthly advance. It is believed that no increase in price would result on account of the 17 per cent increase awarded to the miners, as this slight increase was considered in the routine advance as inaugurated in the spring. This would make prices for the winter season on company coal f.o.b. mines per gross ton and f.o.b. Port Richmond for Tide as follows:

	Line	Tide
Broken.....	\$7.35	\$9.20
Egg.....	7.60	9.25
Stove.....	7.95	9.85
Nut.....	7.95	9.85
Pea.....	6.20	8.00
Buckwheat.....	4.10	5.50
Rice.....	3.00	4.40
Boiler.....	2.50	3.90
Barley.....	2.25	3.65
Culm.....	1.50	2.90

The companies have made no change in the price of the steam sizes, but they have nothing to offer and with the labor troubles now confronting them even barley can be placed in the same class. Only a small amount was in storage this summer and now the companies are drawing on their storage stocks.

A number of independent shippers placed all prepared sizes on a parity, quoting egg, stove and nut at \$9.25, with the average for individual coal about \$9 for these sizes. Pea coal runs from \$6.50@ \$6.90 and the demand is strong, particularly from the West. One of the more conservative larger independents priced egg coal at \$8.50, stove and nut at \$8.85.

**Bituminous**—While the week started off with every indication of continued price recession the beginning of the "vacation" of the anthracite miners caused soft coal prices to respond with an upturn of about 50c. On succeeding days prices were about as follows: Pool 10, \$9@ \$9.50. Pool 11, \$8.50@ \$8.75. Fairmont ranged \$9@ \$9.50, and the Pennsylvania gas coals about \$9.50.

With the lifting of the New England assignment order for five days the indications were that prices would move down rapidly and the only thing that held them back at all was the anthracite trouble. Even should that continue for some time it is thought that with the number of cars released from New England trade, users of bituminous will be able to get an even better supply.

The opinion is quite general now that a price of \$6@ \$6.50 will finally rule in the bituminous trade, and many consumers have expressed a willingness to buy at those figures.

The coke market on spot shipments is still strong at \$17.50@ \$19 for 72-hour foundry.

#### BALTIMORE

*Five-Day Suspension of New England Priority Turns Coal to Other Channels—Prices Continue Downward—Anthracite Men Hard Hit.*

**Bituminous**—A five day suspension, of the New England priority order came when a quicker turn-around of ships and cars under the permit system for vessel loading had pretty well

cleaned up congestion here. The number of cars reported running daily to this city on both roads was below 2,000, while pier dumpings alone were close to 600 cars. Principal coal was New England priority fuel, which was not getting particularly quick movement.

As the New England market is falling off and purchasers demand lower prices, a total suspension of New England priority may be forced. While a number of New England consumers are willing to pay \$7@ \$7.50. At the mines others were demanding the same coals around \$4.50@ \$5 just before the priority suspension.

In the unrestricted market the prices continue downward, especially on the Baltimore & Ohio R.R. connections, where car supply is running from 55 to 75 per cent, and on the Western Maryland R.R. with a 70 to 90 per cent supply. Such line coals are now offered \$7@ \$8.50 f.o.b. mines, with considerable discrimination being shown as to grades in many cases. Best coals are \$9@ \$9.50. The car supply on the Pennsylvania R.R. remains less satisfactory and prices range \$10@ \$10.75.

Export movement, while lightened under the permit system of shipping, will still probably pass the 500,000-ton mark for the month of August. Close to 50,000 tons went for bunker use.

**Anthracite**—The situation here was made much more complicated by the miners' "vacation." Shipments to this city had been meagre enough before, but almost stopped with this new trouble. On the second day after the walk-out only four cars were received here. The situation will be very acute unless some early shipments come through.

### Lake

#### BUFFALO

*Bituminous Prices Soften—Situation Is Materially Improved—Disaster in Anthracite Situation if Miners Fail To Return.*

**Bituminous**—The market has declined, most jobbers reporting that there is more coal in sight than for a long time. Consumers have bought little since the new freight rate went in. They believe that the advance of 60c. to 70c. a ton will soon be discounted.

The time is not far off when the complete control of the market by sellers will disappear. The present average mine price for steam coal is not far from \$9. Gas coal and specialties like smithing are 50c. higher than steam.

Difficulties have eased off a little, unless it be the attitude of the miners. Cars are easier to get and the output is sufficient. Reserve stocks show comfortable gains.

It seems as if abnormal conditions in the entire trade are gradually disappearing. The report all along the line that there is "nothing doing" on

spot offerings is becoming more common. Most of the jobbers would welcome a return to moderate prices. As a rule this is expected before winter, but all predictions have come to little of late, so not too much dependence can be put in them now. So the situation continues to be strained.

**Anthracite**—The supply is only fair. Lake shippers are complaining about as much as the local consumers. A protracted "vacation" of anthracite miners will cause a most serious condition here.

**Lake**—While the Lake shipments are not what they were last season to date, it is becoming apparent that the Northwest's fuel requirement will be safely provided.

The shipments for the week were fairly satisfactory, being 103,300 net tons, of which 46,300 tons cleared for Duluth and Superior, 20,000 tons for Fort Williams, 16,400 tons for Milwaukee, 6,000 tons for Sheboygan, 5,500 tons for Chicago, 5,000 tons for Manitowoc, 3,000 tons for Marinette, 1,150 tons for Racine.

Freight rates have now followed the Ohio ports and are \$1.50 to Racine, 90c. to Manitowoc, 75c. to Milwaukee, 85c. to Chicago, 65c. to Sheboygan and 60c. to Duluth and Fort William.

**Coke**—Jobbers are finding it hard to get coke of any sort and are paying \$18.50 for 72-hour foundry, \$18 for 48-hour furnace and \$14 for domestic sizes. The demand continues light.

#### MILWAUKEE

*Lake Receipts Increase—Inflow by Rail Continues Slow and Uncertain—Anthracite Advanced 10c. Per Ton.*

The movement by Lake during August was fully 50 per cent better than the month previous, but the rail supply continues unsatisfactory. The prevailing opinion is that there will be a serious shortage and that rail movement must be brought to the maximum throughout the winter.

The prediction that coal would drop \$5 per ton by November has had the effect of influencing some consumers to withhold their orders. Dealers however, say that as long as foreign buyers keep offering high prices there is little hope of a reduction in price. The continued shortage in the car supply is another serious drawback.

September brought an advance of 10c per ton on anthracite. Stove and nut sizes now sell at \$15.05, egg at \$14.80 and buckwheat at \$11.50. Pocahontas is being sold at \$14.25 for screened and \$12.25 for mine run. Illinois and Indiana coal is held at \$12.50.

The following table shows Lake receipts at Milwaukee from the opening of navigation up to Sept. 1:

Month	Cargoes, No.	Hard, Tons	Soft, Tons
April.....	4	17,500	18,500
May.....	35	109,600	136,462
June.....	42	138,771	192,573
July.....	45	106,529	243,859
August.....	63	131,206	396,249
Total.....	189	503,606	987,643
Same months, 1919..	318	543,736	2,099,952

## CLEVELAND

*Better Production and Lighter Demand Lowers Prices—Ohio Cities Seek Modification of Order 10—Retail Prices Increase—Temporary Congestion of Coal to Lakes Hampers Receipts.*

**Bituminous**—Better production at the mines and diminished buying by industrial plants have caused prices to show softening tendencies. It is well known that many large users of coal replenished stocks as greatly as possible before the new freight rates became effective.

Operators in the No. 8 district report that on a number of roads the car supply was equal to capacity of the mines, which is somewhat limited by the shortage of labor. The labor situation is still unsettled.

At a meeting in Cleveland a few days ago representatives from Ohio cities conferred with those of the Interstate Commerce Commission. The feasibility of obtaining some modification of Order 10 was discussed. Domestic consumers in Northern Ohio are much perturbed over the sending of the bulk of the coal mined to the Northwest. At a recent hearing before the Commission in Washington, relief was promised if an acceptable plan for distribution of coal could be drawn up, providing for the retention of fuel in Ohio cities.

Large operators with Lake obligations are opposed to drastic modification of Order 10. They insist that when the Lake season closes ample coal will be available for needs in this section. Operators suggest that a small portion be withheld from Lake shipment for this business.

**Pocahontas and Anthracite**—Prices have been increased by most dealers as a result of the new freight rates. Advances range from \$1 to \$2 a ton, which place domestic fuel quotations at the high point for the season. Some dealers are from 4 to 6 months behind in their deliveries.

**Lake Trade**—Coal was dumped at the rate of 4,000 cars a day during the week ended Aug. 28, and a record for shipments for the season was made. The fleet loaded 1,220,000 tons of cargo coal. Coal is being dumped faster than it is being received and last week some surplus stocks which were at the docks were cleaned up. Temporary blocking of transportation channels on some roads is causing lighter receipts. This difficulty is expected to be overcome soon and the heavy movement resumed within a few days.

Retail prices of coal per net ton delivered in Cleveland follow:

Anthracite—egg \$16@ \$17.50; chestnut and stove \$16.25.

Pocahontas—shoveled lump \$16; mine run \$12.50.

Domestic Bituminous—West Virginia splint \$13.25; No. 8 \$12.; Millfield lump \$14.50; Cannel lump \$15.

Steam coal—No. 6 and No. 8 slack \$12.60@ \$12.75; No. 6 and No. 8 mine run \$13.60@ \$14.25; No. 6, 3/4 inch lump, \$14.45.

## Inland West

## CHICAGO

*Steam Market Is Extremely Active—Rate Increase Advances Retail Coal—Anthracite Situation Is Serious.*

The local market has deteriorated into a mad scramble for coal. Price is practically no consideration. This is particularly true of the steam coal market. The market on domestic has been more steady.

The increase of freight rates is going to have considerable effect on the householder. This increase will probably amount to \$1.70 on anthracite, \$1.05 on Pocahontas and New River and 50c.@60c. on Illinois and Indiana coals. It is no exaggeration to say that Franklin County coal is selling to the householder today at the price paid for anthracite last year.

The anthracite situation is beginning to attract a great deal of attention here. No dealer in the city has anywhere near the amount of anthracite he usually has on hand at this time of the year. The prospect of getting hard coal as the season advances is beginning to look exceedingly dark, especially now that the miners' "vacation" in the anthracite region has reduced production to a minimum.

## MIDWEST REVIEW

*Production Slumps with Car Supply—Prices Are Higher—Labor Discontent Continues—Improvement Is Predicted.*

The coal market is as strong as ever. The car supply in all districts during the past week has slumped. Production has been so low that it has practically stamped the buyers into the market. Industries are bidding against each other for coal and the effect this has on prices can readily be seen.

There seems to be a very decided wave of labor unrest in the Midwest producing districts. In the middle of the week 5 mines in the Springfield district were on a strike and it was said that other mines in the same district would go out within a few days. This strike is a protest from the men against the price of powder, which was raised 40c. a keg by the joint agreement recently made in Chicago.

In the Standard district around Belleville more than 20 mines were shut down because the mule drivers had failed to report for work. The new scale was to the effect that mule drivers, coming under the head of day men, were to receive \$7.50 per day. It appears that these men demand a bonus in addition to this recent increase.

The coal operators and representatives of the United Mine Workers have been unable to come to an agreement on the new wage scale at a conference a few days ago. A special committee was appointed to go into the matter. Meantime, there is considerable dissatisfaction on the part of the laborers in the Iowa fields and production is suf-

fering accordingly. In Kansas a special committee of miners and operators granted \$1.50 a day increase to the day laborers. This puts the question up to the general committee which is expected to act almost any day. The districts of Missouri, Kansas, Oklahoma and Arkansas will be influenced by the decisions of this general committee.

Representative operators and wholesalers appear to be optimistic about the outlook of the Midwest industry. It is claimed that, inasmuch as the railroads are back on their own and as there has been an increase in both freight rates and wages of the men, conditions will now improve very rapidly. It is believed the car supply will be better and, once this takes place, the miners will be in a position to earn enough money to keep them entirely satisfied.

## ST. LOUIS

*Unusual Conditions Continue—Car Shortage Is Severe—Transportation Is Poor—Demand Is Heavy and Shortage Continues To Grow—Prices Advance*

The condition in St. Louis proper is fair, everything considered. There is at the present time about a week's supply of steam coal ahead in storage and in transit. In the country conditions are far more acute and many steam plants are on a day-to-day supply.

The city retail situation is far from satisfactory; the domestic situation in the country threatens to be something that is going to call for drastic action when cold weather sets in.

In the Standard district the day men refused to abide by the Chicago decision to accept \$1.50 a day increase. They have been paid a bonus of a couple of hours extra time per day to keep them at work and now want the bonus continued, although the officials say this will be eliminated. The Mt. Olive field is affected, and this trouble may spread all over the southern part of the state in a few days.

The car shortage is severe on the Illinois Central R.R. and some other trunk lines, working time in the past week being about 2 1/2 days on commercial and 5 days on railroad coal. A great part of the Standard coal is going to railroads and most of the commercial coal is moving to outside markets, especially through the Chicago and Detroit gateways.

The last week has seen a heavy movement of coal from Standard and Mt. Olive fields to the Omaha market. The call for coal in the South continues heavy on account of the strike of the miners in Alabama.

In the Carterville field of Williamson and Franklin counties about 1/3 car supply is furnished for commercial coal. The situation on the Iron Mountain is equally bad.

Prices range from \$4 in St. Louis to \$8 for outside shipments on Standard, all sizes. Mt. Olive prices are \$4@ \$4.50 for St. Louis shipment only, no outside shipments. Carterville ranges \$4.50@ \$8.50 at the mines for all sizes.



## DETROIT

*Inadequacy of Supply Continues To Harass Dealers and Consumers—Statements from Government Sources Forecasting Lower Prices Encourage a Waiting Attitude.*

**Bituminous**—Results of efforts to bring about a larger movement of bituminous coal into Detroit are not yet apparent. Shipments scarcely provide for current requirements of steam coal users and public service corporations. The retail dealers have found very little coal obtainable.

While reassuring predictions of price decline may be designed to relieve the present stress on the market until such time as coal will be available in larger quantity, some of the local trade doubt the wisdom of encouraging this delay. They are quite positive in expressing the belief that with the present condition of transportation and the unsupplied requirements of consumers in all sections, the probability of coal selling at lower prices is very remote.

Though some dealers are hopeful that more coal can be had for their customers after the priority order favoring public utilities terminates Sept. 21, others take a less optimistic view, arguing that the pressure on the railroads in crop movement and the probability of less favorable operating conditions are likely to offset this.

**Anthracite**—Supplies of anthracite continue very low. Few retailers are receiving shipments except in very small amounts and at irregular intervals. Many householders have not received delivery on March and April orders. One result of this will be to throw into a few weeks a volume of distribution which usually is handled through the summer months.

## COLUMBUS

*Production Is About 75 Per Cent in Most Fields—Lake Trade Is Active—Prices Continue High.*

The Lake schedule asked by the Interstate Commerce Commission has practically been reached and a heavy tonnage is flowing to the Northwest. The old Lake rate of 50c. is increased 10c. and even higher. Consequently, vessels are not making light trips up but take time to load coal cargoes.

The Hocking Valley R.R. docks at Toledo during the week ending Aug. 28 loaded 222,131 tons, which is the largest week's loading of the season. The Toledo & Ohio Central R.R. docks during the same week loaded 94,173 tons.

Commercial business is about the same with strong demand from every source. Railroads are taking a fair proportion on assigned cars while public utilities are looked after under priority orders. Manufacturers have not been able to accumulate much surplus stocks. Active bidding for available free coal continues with the result that prices rule high.

The domestic trade is also quiet as a result of lack of stocks in the hands of retailers. Consumers are getting

restless but dealers are unable to make deliveries on orders booked for weeks and in some cases months. Retail prices are high and show a considerable range. Hocking lump sells \$8.50@ \$10, and West Virginia splints \$9.50@ \$11. Pomeroy Bend grades sell slightly above those of the Hocking Valley. Some Kentucky coal is coming in which retails at the same price as splints. Pocahontas continues scarce.

Production is rather good. The Hocking Valley is producing about 75 per cent while Pomeroy Bend reports about 70 per cent output. Eastern Ohio is still hampered by lack of cars and reports a production of between 55 and 60 per cent. Cambridge and Crooksville report 65 per cent car supply.

## CINCINNATI

*Retailers Are Meeting the Soft Coal Demand—Second River Wave Will Bring Week's Supply—Operators Sue Railroad—Profiteering Investigation Continues.*

Coal in small quantities is not difficult to get. Almost every dealer has enough on hand to satisfy the demand for soft coal, but there is no smokeless to be had.

The second artificial wave in the Ohio river to be started Sept. 4 from the Wheeling district was to bring down a week's supply for Cincinnati, of 40,000 tons.

The car situation is still bad but there seems to be a little improvement lately. Operators in eastern Kentucky have brought suit in the United States Court at Covington against the Louisville & Nashville R.R. in an effort to compel that road to supply enough cars to that field.

Several Cincinnati coal firms have been indicted by the Federal grand jury, charged with violation of the Lever act, it being alleged in almost all of the indictments that the companies charged \$9.25@ \$9.50 a ton f.o.b. mines for coal when it should have been \$4.50.

Many of the Eastern Kentucky operators declare that the investigation in Covington of charges of alleged profiteering is not a just one, since there was no set price for the coal. As a result of the investigation a committee has been appointed to call upon President Wilson and other officials with an idea of having a definite policy made to be pursued in the coal trade.

## South

## BIRMINGHAM

*Car Shortage Cuts Production—Unsettled Labor Conditions Create Uncertainty—Strong Demand Continues.*

Bad transportation facilities the past week have resulted in a heavy loss in output. Production was the lowest for many weeks. Mines which had been affected by labor troubles were in a position to produce much greater tonnage than was possible with the short car supply, which ran from 30 to 50 per

cent of normal. Some mines are yet idle, but the majority have resumed and are making as steady a gain in output as car supply will permit.

The effect of the general strike to be called in the Alabama field is problematical. It is believed that the response will not be general or of serious proportions. However, the element of uncertainty is necessarily affecting every phase of the industry.

Spot coal is very scarce, selling from \$7.75@ \$8.50 f.o.b. mines. Railroad stocks are short and confiscations are numerous.

## LOUISVILLE

*Operators Charge Utilities With Stocking Coal—Prices Slightly Weaker—Federal Investigation Is Causing Uneasiness.*

Operators in the Eastern Kentucky field are much upset over the fact that mines serving utilities in assigned cars are getting a full supply, while others are getting so few that they are hardly able to operate. Suits were filed at Covington, recently to test validity of the Interstate Commerce Commission order on priority.

It is held that more coal is moving to utility companies than ever before and this tonnage is absorbing a large percentage of all coal as a result of the short car supply. Small mines without public utility orders, and small consumers are feeling the effect of the priority rule.

Prices are fairly steady as a whole, assigned coal moving at \$6@ \$7, with mine run Eastern Kentucky gas on open bids at \$10.25@ \$10.50 and steam mine run \$9.50@ \$10.

## Canada

## TORONTO

*Conditions Are Unchanged—Supplies of Anthracite Are Inadequate—Scarcity of Bituminous Causes Industrial Plants To Close Down—Prices Increased To Meet Rise in Freight Rates.*

There has been practically no change in the condition of the coal market for several weeks. A moderate amount of hard coal is coming forward, but the supply is still inadequate to the demand. Receipts of bituminous continue very light, resulting in further curtailments of operation by industrial plants, some of which have been obliged to close down.

Prices will very shortly be advanced about \$1.29 per ton by the increase in American freight rates. A further increase is anticipated when Canadian freights are raised.

Quotations per short ton are as follows:

Retail—	
Anthracite egg, stove, nut and grate.....	\$15 50
Pea.....	14 00
Bituminous steam.....	\$15@ \$16
Domestic lump.....	18 00
Cannel.....	16 00
Wholesale, f.o.b. cars at destination:	
Bit. lump.....	\$14@ \$16

## News From the Coal Fields

### Northern Appalachian

#### CONNELLSVILLE

*Car Supplies Fairly Steady — Spot Prices Are High but Irregular — Reports of Fourth Quarter Offerings.*

Car supplies are steadier, running at about 20 per cent above the average for May to July inclusive. Hopes are entertained for further improvement as there is some congestion in the region that seems capable of being relieved.

The market for spot coke continues to vary from day to day, a small volume of demand exerting considerable influence. Operators do not hold quotations open, and seem to be offering spot coke only when they have car numbers.

Furnacemen report a slight improvement in receipts on contract. The pig-iron market has turned very dull and this situation may make furnacemen less disposed to buy spot coke. The spot market is quotable \$17@18 for furnace and \$19@19.50 for foundry, per net ton at ovens.

Some operators are now willing to make fourth-quarter contracts for furnace coke at \$12, a price that certainly would not have been considered a fortnight ago, but there is a question whether furnacemen would pay even this price.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended Aug. 28 at 211,100 tons, a decrease of 7,960 tons, but notes that shipments from stocks exceeded production by about 4,300 tons.

#### UNIONTOWN

*Car Shortage Continues—Prices Have Stiffened—Coke Production Slumps.*

Prices have stiffened for both coal and coke, owing to the continued shortage of cars. Pool 34 and by-product coal commands \$10 per ton today, with steam grades \$8.75@9. Coke ranges \$17@17.50 for furnace grades and \$18.50 for foundry. Many consignments have been refused for quality this week, however.

Car shortage is at present the leading factor in price determination. This is worst on the Monongahela Railway where Pennsylvania placements for coal have sunk to a very low level. The Pittsburgh & Lake Erie R.R. did much better, placing an 80 per cent supply. The Pennsylvania branch lines showing was scarcely better. The Southwest branch received about 25 per cent of requirements, with but 15 per cent on the Redstone. Maintenance of the strike in the anthracite region is expected to free some cars for the local tracks.

Coke car placement was slightly better. The Pennsylvania placements on the Monongahela Ry. were 25 per cent. On the same tracks the Lake Erie put down a 75 per cent supply. On the Southwest branch the Pennsylvania reached a 60 per cent placement, with a slightly smaller average on the Redstone.

Complaint is being made that shippers so abused permit privileges in the shipment of export coal that sidings have been congested and many cars thus placed out of service. Many shipments have been refused on account of quality, thus further delaying the return of empties. Production of coke last week fell off about 8,000 tons, shipments exceeding production by about 4,300 tons.

#### PITTSBURGH

*Wage Advance Forestalls Trouble—Car Supplies Increased Further—Spot Market Declines —Contract Shipments Improve.*

Possibilities of labor trouble in the Pittsburgh coal district were eliminated, or indefinitely postponed, by the advances arranged at the recent conference. Wages now run up to \$6.10 for inside men and \$5.60 for outside men while boys receive \$4.

Car supplies at the mines are greatly improved, and not a few mines are now practically up to the limit of what the

men are willing to load. Shipments to Lakes are but little behind the prescribed schedule and congestion at the docks has been reduced by heavier vessel loading.

The iron and steel industry is endeavoring to have a change made in coal car classification. The first classification made "coal cars" of gondolas 33 inches and higher, the limit being afterward raised to 36 inches and the limit may soon be changed to class as coal cars only such flat bottom gondolas as are 42 inches or higher, inside measurement.

The spot market has further declined about \$1, due chiefly to heavier offerings, although an influence is the continuance of restrictions upon the movement of coal for export. The market is now quotable at \$8 for steam and \$9 for gas and byproduct, per net ton at mine.

Shipment of coal on contract has increased materially. Contract holders now have little occasion to buy in the spot market.

#### CENTRAL PENNSYLVANIA

*Prices Break Sharply — Wage Adjustments Are Under Consideration.*

Adjustment of wage differences and the ending of a number of strikes which are now in the course of settlement, along with a better car supply, has reduced the spot price approximately \$3 a ton, making the market \$8.

Operators and miners are in conference in Clearfield County, having met for the purpose of making a new wage scale for all the mines in the Central Pennsylvania field. The new wage scale adopted by the United Mine Workers of District No. 5 and the Pittsburgh Coal Producers' Association, will probably form the basis for settlement.

### Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY  
BITUMINOUS COAL

	1920		1919 (a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Aug. 14b.....	11,813,000	324,984,000	9,092,000	276,595,000
Daily average.....	1,969,000	1,687,000	1,515,000	1,436,000
Aug. 21b.....	11,048,000	336,032,000	10,675,000	287,270,000
Daily average.....	1,841,000	1,692,000	1,779,000	1,446,000
Aug. 28c.....	11,374,000	347,406,000	10,443,000	297,713,000
Daily average.....	1,896,000	1,698,000	1,741,000	1,455,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

Production during the first 205 working days of the last four years has been as follows (in net tons).

1917.....	362,894,000	1919.....	297,713,000
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#### ANTHRACITE

	1920		1919 (a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Aug. 14.....	1,801,000	54,117,000	1,640,000	50,817,000
Aug. 21.....	1,595,000	55,712,000	1,862,000	52,678,000
Aug. 28b.....	1,800,000	57,512,000	1,941,000	54,619,000

(a) Less one day's production during New Year's week to equalize number of days.

#### BEEHIVE COKE

United States Total

Week Ended		1920		1919 (a)	
Aug. 28c	Aug. 21b	Aug. 30	to Date	to Date	to Date
1920	1920	1919	14,048,000	12,798,000	
412,000	425,000	417,000			

(a) Less one day's production during New Year's week to equalize number of days.



**NORTHERN PAN HANDLE**

*Cars More Plentiful—Labor Conditions Are Better—Demand Strong But Prices Recede.*

Conditions were more satisfactory in the Northern Pan Handle district in the last week of August. Railroads serving the mines succeeded in maintaining a better car supply throughout the week. This made it possible to furnish a full allotment of coal to the Lakes, which was moved more expeditiously than had heretofore been the case.

Labor conditions were described as being generally satisfactory although at the same time few mines had a full complement of miners, owing to a general scarcity of labor in the field.

The demand for coal showed no signs of abating although prices were not as stiff as they had been during the first half of August.

**FAIRMONT**

*Car Supply Declines—Mines Fail to Ship Lakes Apportionment—Prices Recede \$1—Exporting Is Light.*

Irregular car placements during the last week of August caused production to decrease in this field. The Baltimore & Ohio R.R. furnished a fair supply both at the beginning and end of the week but during the middle of this period considerable mine idleness was caused by lack of equipment. The same condition was noted on the Western Maryland R.R. with the exception of the Elkins end of the main line, where cars were more plentiful.

Mines on the Monongah Division of the Baltimore & Ohio R.R. failed to meet their apportionment of Lake shipments, the slump being due to shortage of cars.

Fairmont prices for Lake fuel ranged from \$6 to \$7. This is understood to be considerably higher than figures obtained for this class of trade in the nearby fields. Prices generally were on a lower level, there being a drop of about \$1 per ton.

Export shipments were light. Drastic permit regulations are expected to prevent further congestion at the piers.

**Middle Appalachian****POCAHONTAS AND TUG RIVER**

*Car Supply Dwindles—Attitude of Labor Is Improved—Prices Break Sharply.*

During the last week of August the scarcity of cars on the Norfolk & Western R.R. was more pronounced than at any time during the month, consequently the output has shown a decided downward trend.

In the Pocahontas field inability to secure adequate car supply made it impossible to produce much more than 300,000 tons. With labor displaying a little more inclination to work there

was more need for cars. No progress has been made by union organizers and legal action taken to prevent interference with non-union contracts between companies and their employees was also expected to play a part in stopping unionization work in the field.

A tumble in coal prices at Tidewater created consternation among speculators quartered at Bluefield and also among a certain class of jobbers. The drop, however, was welcomed by the established companies who have been marketing their product at reasonable prices.

Production declined in the Tug River region. Connecting lines failed to turn over to the Norfolk & Western R.R. a sufficient number of empties to take care of loading requirements. The Williamson field needed a larger quota of empties, owing to increased loadings. This absorbed a part of the supply which would otherwise have been utilized in the Tug River region.

Transient buyers were treated to a scare when prices began to slide downward with rapidity and orders began to pour in to cease buying.

**KANAWHA**

*Production Slumps to 40 Per Cent, Due to Poor Car Supply—Exporting Is Embargoed—Lake Tonnage Is Low—Prices Are Still Declining.*

Equipment was so scarce that operations were limited to about 40 per cent of potential capacity for the last week of August. Such a condition was due to congestion on lines connecting with the Chesapeake & Ohio R.R. That road was unable either to make delivery of coal with any degree of promptness or to secure empties for the mines on its line.

Exporting of coal was at a standstill because of a Tidewater embargo, seaboard shipments being permitted only for New England delivery. The restricted car supply made it impossible to meet Lake requirements.

Prices were off as compared with the earlier part of the month but with prospects of increase unless car supply improved.

**NEW RIVER AND THE GULF**

*Production Curtailed, Due to Inadequate Car Supply and Power Shortage—New England and Export Tonnage Is Heavy—Prices Are Softening.*

Curtailed production was apparent in both regions in the last week of August, that period ranking as the worst of the month from a production standpoint, largely because of an inadequate car supply.

Mines in the Winding Gulf region had two adverse factors to contend with. The Virginian Power Co. was unable to furnish enough power to enable mines to operate regularly, at least on the line of the Virginia Ry. This and a shortage of cars held production to 55 per cent at mines on this road. Shortage of equipment, however, limited production to about 50 per cent

at mines served by the Chesapeake & Ohio Ry.

Eastern movement of coal from the Gulf region was for New England delivery and export, there being probably more coal exported than conditions had previously permitted.

Prices were off somewhat, but very little free coal was available.

Another car shortage developed in the New River field, preventing mines from producing anything like capacity. During the greater part of the week it is doubtful if mines were being operated at more than 40 per cent.

Consignments to the Lakes and to Tidewater rose and fell with the car supply. Of the tonnage to seaboard a fairly large percentage was for export. Shipments to western markets were comparatively small. In common with a movement elsewhere, prices appeared to have receded somewhat in the New River region.

**LOGAN AND THACKER**

*More Mines Are Resuming Operations—Logan Production Still Is Below Normal—Lake Shipments Are Light—Prices Soften.*

Gains were made in production in the Williamson field though such gains were not marked, despite the strike in effect in the region since July 1. With federal troops on duty in sufficient number to patrol plants in danger of attack, an increasing number of companies are operating. With the arrival of federal troops, Kentucky guardsmen were withdrawn.

Figures compiled show that the tonnage loss due to the strike during the week ended Aug. 21 was 108,973 tons. The arrival of federal troops had a most quieting effect on the strike situation.

There was a slight increase in the tonnage produced in the Guyan region, output reaching about 210,000 tons. Yet the car supply made it possible to produce only about 50 per cent of normal capacity. Public utility orders cut the car supply for free coal loading below the average of the field. A very small proportion of the Logan output was shipped eastward. Tidewater embargo prevented larger Eastern shipments. While Western shipments were increased in consequence, yet Lake shipments were reduced because of the limited car supply. The tonnage of coal mined on Aug. 23, amounting to over 62,000 tons, was the heaviest daily output of the year. As in other high volatile fields prices have also been reduced in the Guyan field.

**NORTHEAST KENTUCKY**

*Production Increases Slightly—Exports Are Embargoed—Western and Lake Shipments Increase.*

In the last week of August production amounted to 49 per cent of potential capacity as against 42 per cent during the previous week, a gain of 7 per cent. The total output was 115,910 tons. As the losses from a shortage of cars still amounted to 111,000

tons or 47 per cent it will thus be observed that there was available for mines on the Chesapeake & Ohio R.R. a 53 per cent car supply.

As during the previous week little or no coal was being shipped to Tidewater, an embargo making that impossible. While Lake and Western shipments in general were larger as a result of the Tidewater embargo and increase in car supply yet the tonnage flowing to the Lakes was not as large in volume as had been observed during the early part of August.

## Southern Appalachian

### SOUTHEASTERN KENTUCKY

*Wagon Mines Take Action Against I. C. C. Order—Local Strikes Curtail Production—Market Is Still Brisk.*

The ruling that no open-top cars shall be placed for wagon mines came as a complete surprise. Some of the more prosperous wagon mine operators are consulting legal counsel as to whether they might have some redress through the courts.

A large operation on Straight Creek is out on strike again. The men are demanding an increase of \$1 on loading

and day work. This operation has an output of approximately 1,000 tons daily. Their car rating was reduced last month from 18 to 13.3 cars, due to labor disaffection.

The market is still brisk. Quotations are \$10 up for gas coal and \$9@ \$10 for steam. Quotation for box car coal is \$9, which shows that this equipment will be at a premium should Order 14 remain in force.

### WESTERN KENTUCKY

*Operators Protesting Confiscations—Car Shortage Is More Severe—Little New Business Is Being Accepted—Prices Are Steady.*

Operators report that railroads are seizing coal more freely, causing considerable trouble in making deliveries.

Car supply has again declined. It is reported that Western Kentucky last week got out about 2,700 cars, as against a production capacity of 4,500.

Car supply on the Illinois Central R.R. is less than 46 per cent, and not much better on the Louisville & Nashville R.R.

The labor situation is much easier and all mines are operating as close to capacity as car supply will permit.

Very little new business is being accepted. Short car supply scarcely permits taking care of contracts, old or-

ders and the assigned cars for utilities.

Prices are fairly steady as a whole, lump \$5 and \$5.50 on new business; mine run and screenings \$4.50 and \$5. A considerable amount of tonnage is moving to Louisville, Nashville and Memphis, with a fair movement North through Evansville.

### UTAH

*Fuel Oil Shortage on Pacific Coast Opens New Coal Market—Prices Are Advanced.*

As a result of the shortage of fuel oil a new market for Utah coal is being developed on the Pacific coast. Plants there are said to be making arrangements to burn coal instead of oil, as in the past. It is felt that the coal deposits of Utah furnish the most available supply for the coast towns. Mines are capable of supplying the demand if adequate transportation facilities are provided.

According to officers of the one company in Ogden City, the price of coal in Utah will be increased 50 cents on Sept. 1. The company states that the advance on Wyoming fuel will be \$1, sending up the retail price to \$10.75 per ton. The increase will take effect at once. The Ogden coal companies have large quantities of coal on hand.

## Germany and Czechoslovakia To Ratify Coal Convention

A coal convention, which still requires the ratification of both Parliaments, has been concluded between Germany and Czechoslovakia. In return for 101,000 tons of Silesian coal Czechoslovakia is to supply 202,000 tons of lignite per month, as also bunker coal for the transport of goods from Germany. The agreement is valid from July 1, 1920, to Jan. 1, 1921.

## France's Coal Supply Was Nearly Normal in April

The French coal situation, according to the *Colliery Guardian*, is compared with the past in a general budget report drawn up by M. Paul Doumer for the Chamber of Deputies. In 1915 nearly 36,000,000 tons of coal were consumed; of this, 18,777,000 tons were imported. Consumption had increased in 1917 to 39,927,000 tons, and imported coal decreased to 15,100,000 tons. In 1918 the consumption was 38,000,000 tons, whereas the imported changed but little at 15,933,000.

The supplies in 1919 were, to the nearest thousand tons, as follows: 15,938,000 tons from the French pits, 15,646,000 tons from England, 1,030,500 tons from Germany, 1,735 tons from Belgium, and 420,000 tons from the United States, and 2,503,000 from the Ruhr basin. The exact total was 37,273,570 tons. The monthly amount at disposal, therefore, was 3,106,000 tons.

How France has fared this year in comparison with the position before the war, when the monthly supplies totaled

4,500,000 tons, is seen by the following figures:

January, 3,410,718 tons, of which 1,507,295 tons were French, 1,366,903 tons English, 247,786 tons from the Sarre, and 221,095 tons German.

February, 3,417,733 tons, of which 1,344,214 tons were French, 1,321,727 tons English, 292,928 tons Sarre, and 318,664 tons German.

March, 3,302,206 tons, of which 992,314 tons were French, 1,340,640 tons English, 265,306 tons Sarre, and 334,036 tons German.

April, 4,234,594 tons, of which 1,405,909 tons were French, 958,855 tons English, 278,509 tons Sarre, and 334,443 tons German.

May, 2,895,096 tons, of which 609,987 tons were French (so little on account of strikes), 1,154,530 tons English, 426,397 tons Sarre, and 551,812 tons German.

In the matter of coke, the monthly consumption was 583,300 tons, of which 330,000 tons were made in France. In 1920 the average tonnage obtainable per month was 350,000 tons, only 60 per cent of the normal requirements of her industries. To quote M. Doumer: "It is not surprising that a large proportion of her furnaces are out."

## Coal Found in Malay Peninsula Will Help Industries

Official statistics at hand from Singapore reveal some interesting facts in regard to the coal supplies of the Straits Settlements. The following table shows the quantities and value of imports and exports in 1918 and 1919:

	1918		1919	
	Tons	Value	Tons	Value
Imports	510,100	£2,878,800	503,541	£2,281,751
Exports	369,288	2,160,236	487,924	2,245,726

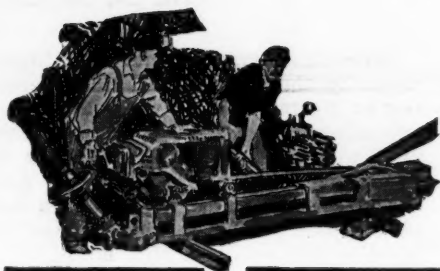
It should be explained that this represents chiefly bunker coal, which accounts for the relatively large amount of exports. A comparison with the statistics of 1913 brings out two outstanding features—the falling off in shipping requirements at Straits Settlements ports in recent years and the greatly increased price of coal supplies. In 1913 no less than 1,080,454 tons were imported at a value of £1,325,470.

Detailed statistics showing the sources of supply in 1919 are not yet to hand, but it is possible to make the following interesting comparison (in tons) of the principal sources of supply in 1913 and 1918:

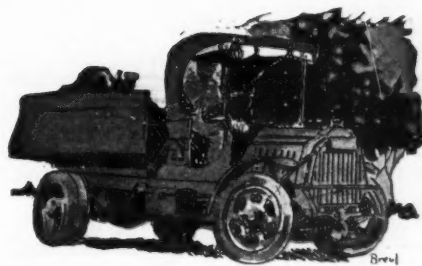
	1913	1918
Japan	498,510	370,345
China	93,935	28,344
British India and Burma	194,995	19,482
South Africa	36,591	18,019
French Indo-China	24,901	16,704
Brunei	17,062	13,509
Sumatra	5,250	8,730
British North Borneo		8,637
Australia	162,057	8,074
Dutch Borneo	20,557	7,236
United Kingdom	22,137	

Some years before war broke out, coal had been discovered in the Malay Peninsula, in the States of Perak and Selangor. The coal found at Rawang, in Selangor, some twenty-five miles from Kuala Lumpur, the capital of the Federated Malay States, proved to be of first-rate quality, and as prospecting proved a supply of over 10,000,000 tons the Malayan Collieries, Ltd., was formed to work it and place it on the market.





# Mine and Company News



## IDAHO

**Pocatello**—Articles of incorporation have been filed in the county clerk's office of Idaho County by the Neal Coal Mining Co. for the sum of \$500,000. Some time ago a deposit was found which the miners thought would lead to an extensive coal vein, so several geologists were brought up from the University of Idaho and stated that indications were the best they had ever seen.

## ILLINOIS

**Carlinville**—The people of Carlinville have realized for two years what it means for a big concern like the Standard Oil Co. to locate in their midst and go to developing their coal fields.

The company owns 25,000 acres of coal rights at Schoper, and during the past two weeks the officials have purchased about 250 acres more, so that if they should want to make much more developments in the future, they would have plenty of coal.

**Benton**—Suits aggregating \$30,000 have been filed against Franklin county in the circuit court by fourteen persons who allege personal damage and loss of property in the recent anti-Italian demonstrations at West Frankfort, Ill. Among the plaintiffs is Maria Carrare, whose husband, Louis, was killed by a mob during the demonstration.

## IOWA

**Des Moines**—The Iowa coal miners have presented to the operators demands for a wage increase of \$1.50 a day or a weekly increase of \$7.50. Both operators and the miners will confer on the demand, which is the same as is being asked in Kansas and Illinois.

The Iowa Southern Utilities Co. is now preparing to furnish power to 18 new electric mining machines as soon as they arrive, the order having been placed several days ago. These 18 new machines are to be placed in several different mines which are so situated as to be able to secure electric power from a high-tension line. Other machines will be ordered in the near future.

## KENTUCKY

**Whitesburg**—Work has already been started on improvements undertaken by the Louisville & Nashville R.R. in line with a program which includes double tracking between Typo and Hazard. A road is also to be built around the "bend" from Lemmit to the mouth of Lott's Creek, where an important new coal field was opened this year. At

Typo the double track will connect with the First Creek coal field, which produces 300 cars daily. Other parts of the road to be double tracked are those between Whitesburg and Hazard and Whitesburg and McRoberts. The Neon yards are to be enlarged also.

## OHIO

**Lisbon**—Another coal-stripping proposition has just been put through here when U. V. Gaskill sold to the Miller Coal Co., of Youngstown, O., 191 acres on the Lisbon-Columbiana road and commonly known as the Gray Farm. The Miller Co. is now operating on adjoining farm lands. The overburden is said to range from 32 to 49 ft., with an average of 40 ft.

**Maynard**—The Griffen Coal Co., has been incorporated with a capital of \$25,000 to mine coal in the Belmont County field. The incorporators are Joseph E. Christy, William A. Griffen, Frank Donley, Alonzo L. Beck and John E. Applegarth.

**Columbus**—With offices in the Dispatch Annex Building, the Franklin Coal Exchange has been chartered with a capital of \$30,000 to do a retail business. The incorporators are Ray Wareham, Morgan L. Evans, James K. Hall, John H. Teters and Edward C. Hall.

**Buchtel**—The Klegg Hill Coal Co., has been incorporated with a capital of \$50,000 to operate mines. The incorporators are M. E. Cox, Florence E. Cox, E. H. Hayman, Harvey Sayre and Bridget Sayre.

**Martins Ferry**—Three men were injured, one probably fatally, when stone fell on a car load of miners en route out of the Joseph Meister Coal Co.'s mine here.

## OKLAHOMA

**Tulsa**—The Albert Coal Mining Co. has been organized and charter filed with the secretary of state. The company is capitalized at \$50,000 and will develop coal lands near here. The incorporators are: J. Albert, A. Abend and A. Brodsky, all of Tulsa.

## PENNSYLVANIA

**Waynesburg**—Work is expected to be started shortly on developing a tract of coal in Dunkard Township recently sold by Albert G. Titus, of Dunkard Township, to John H. Moffit, of Charleroi, and T. R. Sharpneck, of Rices Landing, who are understood to be representing the Lilley Coal & Coke Co.

The block consists of 285½ acres of both the Pittsburgh and the Mapleton

veins, both outcropping along the Monongahela River near the mouth of Dunkard Creek.

**Washington**—Two miners were killed in accidents in Washington County mines recently. Frank Black, aged 29, met instant death when caught and crushed under a string of loaded cars at Cokeburg Junction, near Bentleyville.

Mike Bedna, aged 40, was crushed under a fall of slate at the Vesta No. 5 mine, near California.

**Pottsville**—Smoked out of their "breasts" in which they had fired a blast, two miners were instantly killed at the Wadesville colliery recently, when a runaway car dashed down the slope at a speed exceeding a mile a minute was released when a chain attached to a drawhead broke.

**Pittsburgh**—The Pittsburgh Steel Co. purchased several tracts of coal and surface in Monongahela township, Greene county. The total consideration is \$128,604.53.

## TENNESSEE

**Crossville**—The J. H. Finley Lumber Co. has punctured the Sewanee seam and found it running from 10 to 14 feet in thickness. The company has a force at work now, running an entry. The coal is a high-grade domestic and coking coal. The J. H. Finley Lumber Co. owns 10,000 acres in a continuous body. The property lies 3½ miles south of Crab Orchard where a gentle slope can be had to construct a road directly to the mine.

## WASHINGTON

**Spokane**—To deal in wholesale coal throughout the Northwest and on the Pacific Coast the Union Coal Co. has been incorporated with a capital of \$100,000 and will have its head office in Spokane. The incorporators are: R. G. Crocker, F. W. Dewart and Mrs. E. F. Waggoner. A branch office will be maintained in Seattle.

## WISCONSIN

**Milwaukee**—A big impetus to Milwaukee's coal-receiving facilities was given recently when the new 300,000-ton coal storage dock of the Great Lakes Coal and Dock Co., at Twentieth and Canal Sts., formally began operations.

The giant unloading "clam" of the docks picks up ten tons of coal at a time, carries it 380 ft. to the end of the dock, drops it through the screener into the storage compartments or coal cars, and returns for another load, all in the space of 60 seconds. It can unload 600 tons of coal an hour.

### WEST VIRGINIA

**Montgomery**—An unconfirmed report is prevalent in this district that the Belgian government soon will purchase the holdings of the Ingram Branch Coal Co.

It is said an option was given Belgium recently and several cars of coal were shipped abroad. The price involved is estimated at \$1,500,000.

**Welch**—Col. Wm. Leckie of Welch and associates have launched another new company in southern West Virginia—the Cub Creek Coal Co., which is capitalized at \$100,000.

This company, according to preliminary plans, will operate in Wyoming County. Others interested aside from Col. Leckie are: A. E. Jennings of Welch, J. B. Purcell of Huntington, W. R. Whitman of Roanoke, Va., and G. R. McAbee of Philadelphia, Pa.

**Fairmont**—Mining operations in Lincoln district of Marion County will be undertaken by the Troll Coal Co., newly organized according to present plans, this company having an authorized capital stock of \$100,000. Principally interested in the new concern are: John T. Troll of Wheeling, Clay T. Amos, James H. Baker, Paul Haymond and Frank C. Haymond of Fairmont, W. Va.

**Elkins**—The Cobb Coal Co. has been organized with a view to operating in Upshur County. This company is capitalized at \$50,000. Identified with the new company are: Wm. H. Cobb of Elkins, W. W. Cobb of Charleston and others.

**Charleston**—The Nellis Coal Co., operating on Brush Creek in the Coal River territory, said to now be a subsidiary of the American Rolling Mill Co., has under consideration the question of enlarging its plant. In the meantime the company is having new houses erected for the accommodation of additional miners at its plant.

Under the direction of Charles E. Sandberg, president and general manager, the Sandberg Coal & Land Co. has initiated development work on a new operation at Carlin, in the Kanawha county field, where the company will secure coal from the No. 2 Gas seam, although it is probable that the company will also operate in the upper seam. Work on the installation of a siding is progressing.

Plans are being made by the newly organized Houghton Gas Coal Co. of Charleston to operate at Marmet in the Kanawha county field, this concern having a capitalization of \$50,000. Active in the organization of the new company were M. J. Houghton and C. C. Taylor of Charleston, C. S. Thompson of Quincy, Rean Turner of Diamond, W. Va.; M. J. Nelson of Malden.

**Huntington**—J. M. Moore, president of the Ruth Anne Coal Co., has purchased the Boone Block Coal Co. mines, located on Horse Creek, Coal River. It is stated that a considerable expenditure will be made on property development, to raise output to 1,000 tons per day.

**Bluefield**—Arrangements have been made by the Norton Coal Co., operating at Norton, Va., to make a number of improvements at its plant within the next few months, with a view to increasing production. In the first place more dwellings for miners are to be built and it is also planned to build a well equipped club house.

**Clarksburg**—Following the completion of its organization by the election of officers the Apex Coal Co. will within a short time take steps to develop a tract of something over 50 acres in Lewis County in the Pittsburgh and Redstone seams. This company has a capital stock of \$50,000 and its officers are: C. A. Butcher, president and general manager; John B. Heffner, vice president and P. M. Ireland, secretary and treasurer, who, together with John W. Keister and F. F. Butcher, constitute the board of directors.

### BRITISH COLUMBIA

**Vancouver**—H. W. Dawson and F. W. Osborn, officials of the Yorkshire and Canadian Trust Co. of Vancouver are now in Smithers for the purpose of making inspection of their extensive holdings in the Copper River district. The property, consisting of seventy-five leases, was taken up by the Copper River Coal Co., the National Finance Co. now in liquidation handling the property as fiscal agents, until 1914, and is now being handled by the Yorkshire and Canadian Trust Co., liquidators of the National Finance Co.

## Association Activities

### Pennsylvania Wagon Coal Shippers' Association

Newly elected officers of the association are: President, C. W. Hammond, Bolivar, Pa.; Vice-President, M. C. Stewart, Indiana, Pa.; Secretary, E. S. Bowden, Johnstown, Pa.; Treasurer, J. W. Rankin, Clymer, Pa.

### Northern West Virginia Coal Operators' Association

The fact that the United States Circuit Court of Appeals has decided against the Lambert Run Coal Co. in its efforts to permanently restrain the Baltimore & Ohio R.R. from assigning cars will not deter the association from aiding the Lambert Run Co. in carrying the case to the Supreme Court. The Association still contends that the assignment of cars is only only discriminatory but that it is illegal and that no emergency exists at least insofar as the railroads are concerned.

### Winding Gulf Operators' Association

According to figures compiled by the Winding Gulf Operators' Association which is seeking to encourage larger loadings per car, only one company—the Devils Fork Coal Company—succeeded in averaging 61 tons to a car in loading during June. The number of companies able to load 59 tons to a car on an average was only four. There were six companies able to load 58 and two companies succeeded in averaging 57 tons per car. The average for a good many companies in the district was only 38 tons per car.

### New River Operators' Association

The executive committee of the New River Operators' Association at a meeting held in Charleston in the third week of August decided to send a team from the

field to compete with other teams in the National Mine Rescue field day meet at Denver, whether a team from the field was successful or not in the state meet at Charleston.

President Caperton of the association summarized for the benefit of members what had been considered and decided upon at a number of meetings which he has attended in behalf of the association and in fact which have kept him extremely busy. The position he had taken on various matters was ratified by the executive committee which also received a report from its new traffic manager, W. B. Troxell. It was announced following the executive committee meeting that a general meeting will be held in September.

## Traffic News

**I. C. C. Decision**—Decided Aug. 18, 1920. Supplementing original report, 58 I. C. C., 220, carriers authorized to increase rail-lake-and-rail rates between points on the Atlantic seaboard and interior points, on the one hand, and St. Paul and Minneapolis, Minn., and points grouped therewith, on the other, upon the same basis as is applied to corresponding rates to and from Duluth, Minn.

**Intrastate Rate Increases**—Public service commissions of California and New Hampshire have authorized advances in intrastate freight and passenger rates in accordance with increases laid down by the Interstate Commerce Commission for interstate rates. With authorizations previously reported in Pennsylvania, Maryland, Michigan, Massachusetts, New Jersey and Wyoming, there are now nine state commissions which have allowed the full increase in both freight and passenger rates. Wisconsin, West Virginia, Iowa, Ohio, Minnesota, Montana and New York have allowed the full freight advance, but denied or postponed action on passenger fares under the limitations of state laws. Illinois commission authorized increases of

33½ per cent on intrastate freight. Permission already obtained from the Indiana commission to file the new freight tariffs prior to the hearing set for Aug. 23 probably indicates the intention of the commissioners to take action similar to that of the New York state commission, which allowed the freight advances to go into effect without approval of the justness of the increase.

**Interstate Commerce Commission** has notified the Washington Public Service Commission that coal rates are reduced from Montana field to Washington, thereby invading the Puget Sound district; decrease made on contention of Northern Pacific R.R. that lack of fuel oil and local supply necessitated additional coal receipts from new territory. New rates from Montana: \$5.20 to Seattle and locality, \$6.40 to Bellingham and \$5.70 to the Chihalis region.

## Coming Meetings

**American Mining Congress** will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

**The Canadian Institute of Mining and Metallurgy** will hold its second annual western meeting at Winnipeg on Oct. 25, 26 and 27; the headquarters of the meeting will be at the Hotel Fort Garry. Local secretary, W. W. Berridge, 905 Union Trust Building, Winnipeg, Canada.

**National Safety Council** will hold its 1920 congress on Sept. 27 to Oct. 1, inclusive, at Milwaukee, Wis. General Manager, C. W. Price, Chicago, Ill.

**Oklahoma Coal Operators' Association** will hold its annual meeting Sept. 14, at McAlester, Okla. Secretary, F. F. LaGrave, McAlester, Okla.

**The Sixth National Exposition of Chemical Industries** will be held in the Grand Central Palace, New York City, Sept. 20-25. The Fuel Economy Division has been added this year.



# CURRENT PRICES—MATERIALS & SUPPLIES

## IRON AND STEEL

**FIG IRON**—Quotations compiled by the Matthew Addy Company:

	Current	One Year Ago
<b>CINCINNATI</b>		
No. 2 Southern	\$45.60	\$23.80
Northern Basic	51.30	27.55
Southern Ohio No. 2	47.80	28.55
<b>NEW YORK, Tidewater delivery</b>		
2X Virginia (silicon 2.25 to 2.75)	54.30	32.40
Southern No. 2 (silicon 2.25 to 2.75)	49.70	35.20
<b>BIRMINGHAM</b>		
No. 2 Foundry	42.00@44.00	27.75
<b>PHILADELPHIA</b>		
Eastern Pa., No. 2 x 2.25-2.75 sil.	50.00*	30.65
Virginia No. 2	50.00*	32.10
Basic	48.00†	30.90
Grey Forge	45.00*	29.90
<b>CHICAGO</b>		
No. 2 Foundry Local	46.00	26.75
No. 2 Foundry Southern	48.00	28.00
<b>PITTSBURGH, including freight charge from the Valley</b>		
No. 2 Foundry Valley	49.00	29.15
Basic	48.50	27.15
Bessemer	50.00	29.35

\* F. o. b. furnace. † Delivered.

**STRUCTURAL MATERIAL**—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	Mill	—New York—	St. Louis	Chicago
	Pittsburgh	Current	One Year Ago	
Beams, 3 to 15 in.	\$2.45@3.10	\$4.58	\$3.47	\$4.04
Channels, 3 to 15 in.	2.45@3.10	4.58	3.47	4.04
Angles, 3 to 6 in., 1/2 in. thick	2.45@3.10	4.58	3.47	4.04
Tees, 3 in. and larger	2.45@3.75	4.63	3.52	4.09
Plates	2.65@4.00	4.78	3.67	4.24

**BAR IRON**—Prices in cents per pound at cities named are as follows:

	New York	Pittsburgh	Denver	St. Louis	Birmingham
Wire	5.75	4.75	4.95	4.50	5.25
Cut					

**TRACK SUPPLIES**—The following prices are base per 100 lb. f.o.b. Pittsburgh for carload lots, together with the warehouse prices at the places named:

	Pittsburgh	Chicago	St. Louis	Denver	San Francisco	Birmingham
Standard railroad spikes 1/2 in. and larger	\$4.00	3.55@4.25	\$5.34	\$5.50	\$7.75	\$6.00
Track bolts	6@6.50	4.00@5.25	7.00	6.75	8.75	8.00
Standard section angle bars	3@4	2.75	2.00	5.05	5.30	

**COLD FINISHED STEEL**—Warehouse prices are as follows:

	New York	Chicago	Cincinnati	St. Louis
Round shafting or screw stock, per 100 lb. base	\$6.36	\$5.80	\$6.50	\$5.90
Flats, squares and hexagons, per 100 lb. base	6.86	6.30	6.85	6.40

**HORSE AND MULE SHOES**—Warehouse prices per 100 lb. in cities named:

	Mill	Chicago	St. Louis	Denver	Birmingham
	Pittsburgh				
Straight	\$5.75	\$7.00	\$7.00	\$8.15	\$7.00
Assorted	5.85	7.15	7.15	8.40	7.25

Cincinnati—Horseshoe nails sell for \$4.50 to \$5 per 25-lb. box.

**CAST-IRON PIPE**—The following are prices per net ton for carload lots:

	—New York—	Chicago	St. Louis	San Francisco
	Current	One Month Ago	Year Ago	
4 in.	\$87.22	\$79.30	\$57.00	\$82.10
6 in. and over	77.22	76.30	54.00	79.10

Gas pipe and 16-ft. lengths are \$1 per ton extra.

**STEEL RAILS**—The following quotations are per ton f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb. is charged extra:

	—Pittsburgh—	—Chicago—
	Current	One Year Ago
Standard Bessemer rails	\$55.00	\$45.00
Standard openhearth rails	57.00	47.00
Light rails, 8 to 10 lb.	12.58*	2.585*
Light rails, 12 to 14 lb.	12.54@3.84*	2.54*
Light rails, 25 to 45 lb.	12.45@3.75*	2.45*

\*Per 100 lb. †Note:—These are Steel Corporation prices; spot rails not obtainable at present. Prices in open market range as high as \$76 per ton.

**OLD MATERIAL**—The prices following are per gross ton paid to dealers and producers in New York. In Chicago and St. Louis the quotations are per net ton and cover delivery at the buyer's works, including freight transfer charges:

	New York	Chicago	St. Louis
No. 1 railroad wrought	\$29.75	\$28.50	\$28.50
Stove plate	\$26.00	28.75	30.50
No. 1 machinery cast	41.00	36.50	38.50
Machine shop turnings	15.50	9.75	13.00
Cast borings	17.50	13.25	16.00
Railroad malleable cast	30.00	28.74	29.50
Rerolling rails	35.50	38.00@39.00	35.00
Relaying rails	54.00	57.50@62.50	50@55

**COAL BIT STEEL**—Warehouse price per pound is as follows:

	New York	Cincinnati	Birmingham	St. Louis	Chicago	Denver
Solid	\$0.10	\$0.16†	\$0.18	\$0.12	\$0.13	\$0.18

**DRILL STEEL**—Warehouse price per pound:

	New York	St. Louis	Birmingham	Denver
Solid	12@14c.	13c.	15c.	21c.
Hollow, 1/2 hex.	17c.			

**WROUGHT PIPE**—The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

BUTT WELD			
Inches	Steel	Galv.	Iron
1 to 3	45 to 57 1/2	41 1/2 to 44	15 1/2 to 25 1/2
3 1/2 to 6	50 to 53 1/2	37 1/2 to 41	21 1/2 to 29 1/2

LAP WELD			
Inches	Steel	Galv.	Iron
2	47 to 50 1/2	34 1/2 to 38	20 1/2 to 28 1/2
2 1/2 to 6	50 to 53 1/2	37 1/2 to 41	21 1/2 to 30 1/2
2 to 3	53 to 56 1/2	40 1/2 to 44	24 1/2 to 34 1/2

	—New York—	—Cleveland—	—Chicago—
	Black	Galvanized	Black
1 to 3 in. steel butt welded	40%	24%	\$39.00
3 1/2 to 3 in. steel lap welded	35%	20%	41.00

Malleable fittings. Class B and C, from New York stock sell at list + 23%.

Cast iron, standard sizes, net.

**WIRE ROPE**—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York	St. Louis
Hercules red stand, all constructions	20%	
Patent flattened strand, special and cast steel	20%	
Patent flattened strand, iron rope	5%	
Plow steel round strand rope	30%	
Special steel round strand rope	30%	
Cast steel round strand rope	22 1/2%	
Iron strand and iron tiller	5%	
Galvanized iron rigging and guy rope	+12%	

San Francisco: Galvanized, less 5%, bright less 25%.

Chicago, +12% on galvanized, 30 off on bright.

**SHEETS**—Quotations are in cents per pound in various cities from warehouse also the base quotations from mill:

	Large	St. Louis	Chicago	San Francisco	—New York—
	Mill Lots				Current
Blue Annealed					
No. 10	\$3.55@7.50	\$7.09	\$7.02	\$8.65	\$7.23@8.00
No. 12	3.60@7.55	7.09	7.07	8.70	7.28@8.05
No. 14	3.65@7.60	7.09	7.12	8.75	7.33@8.10
No. 16	3.75@7.70	7.09	7.17	8.85	7.43@8.20
Black					
*Nos. 18 and 20	4.15@8.30	8.10	8.00	10.60	8.41@9.80
*Nos. 22 and 24	4.20@8.35	8.10	8.05	10.65	8.46@9.85
*No. 26	4.25@8.40	8.10	8.10	10.70	8.51@9.90
*No. 28	4.35@8.50	8.10	8.20	10.80	8.61@10.00
Galvanized					
No. 10	4.70@8.50	9.70	8.50		8.91@11.50
No. 12	4.80@8.60	9.70	8.60	11.35	9.01@11.50
No. 14	4.80@8.60	9.70	8.60	11.35	9.01@11.50
Nos. 18 and 20	5.10@8.90	9.70	8.90	11.65	9.26@11.90
Nos. 22 and 24	5.25@9.05	9.70	9.05	11.80	9.41@12.05
*No. 26	5.40@9.20	9.70	9.20	11.95	9.56@12.20
*No. 28	5.70@9.50	9.70	9.50	12.25	9.86@12.50

\* For painted corrugated sheets add 30c. per 1000 lb. for 5 to 28 gage; 25c. for 19 to 24 gages; for galvanized corrugated sheets add 15c., all gages.

## SHOP SUPPLIES

**NUTS**—From warehouse at the places named, on fair size orders, the following amount is deducted from list:

	—New York—	—Chicago—	St. Louis
	Current	One Year Ago	Current
Hot pressed square	\$6.00	\$3.25	\$0.50
Hot pressed hexagon	+ 6.00	2.70	.50
Cold punched square	+ 6.00	3.25	.50
Cold punched hexagon	+ 6.00	2.70	.50

Semi-finished nuts,  $\frac{3}{16}$  and smaller, sell at the following discounts from list price:

	Current	One Year Ago
New York.....	30%	50-10%
Chicago.....	50%	50%
Cleveland.....	50%	60-10-10%
St. Louis.....	45%	....

**MACHINE BOLTS**—Warehouse discounts in the following cities:

	New York	Cleveland	Chicago
1 by 4 in. and smaller.....	+20%	20%	20%
Larger and longer up to 1 in. by 30 in.....	+20%	20%	20%

**WASHERS**—From warehouses at the places named the following amount is deducted from list price:

For wrought-iron washers:			
New York..... list	Cleveland.....	\$2.50	Chicago..... \$3.00
For cast-iron washers the base price per 100 lb. is as follows:			
New York.....	\$7.00	Cleveland.....	\$4.50 Chicago..... \$4.75

**RIVETS**—The following quotations are allowed for fair sized orders from warehouse:

	New York	Cleveland	Chicago
Steel $\frac{7}{8}$ and smaller.....	List Net	40%	30%
Tinned.....	List Net	40%	30%
Boiler, $\frac{1}{2}$ , 1 in. diameter by 2 in. to 5 in. sell as follows per 100 lb.:			
New York.....	\$6.00 base	Chicago.....	\$5.62 Pittsburgh..... \$4.50
Structural, same sizes:			
New York.....	\$7.10	Chicago.....	\$5.72 Pittsburgh..... \$4.60

## CONSTRUCTION MATERIALS

**LINSEED OIL**—These prices are per gallon:

	New York	Chicago
	Current	One Year Ago
Raw, 5-bbl. lots.....	\$1.25	\$2.15
5-gal. cans.....	1.40	2.28
	Current	One Year Ago
	Current	One Year Ago
Raw, 5-bbl. lots.....	\$1.25	\$2.15
5-gal. cans.....	1.40	2.28

**WHITE AND RED LEAD**—Base price.

	Current	1 Year Ago	Current	1 Year Ago
	Dry	In Oil	Dry	In Oil
100-lb. keg.....	15.50	17.00	13.00	14.50
25 and 50-lb. kegs.....	15.75	17.25	13.25	14.75
12-lb. keg.....	16.00	17.50	13.50	15.00
5-lb. cans.....	18.50	20.00	15.60	16.50
1-lb. cans.....	20.50	22.00	16.00	17.50
500 lb. lots less 10% discount. 2000 lb. lots less 10-2½% discount.				

**COMMON BRICK**—The prices per 1000 in cargo or carload lots are as follows:

Chicago.....	\$16.00	Cincinnati.....	\$24.00
St. Louis, salmon.....	16.00	Birmingham.....	15.00

**PREPARED ROOFINGS**—Standard grade rubbered surface, complete with nails and cement, costs per square as follows at manufacturing points:

	New York			Philadelphia		
	1-Ply	2-Ply	3-Ply	1-Ply	2-Ply	3-Ply
No. 1 grade	\$2.50	\$3.00	\$3.55	e.l. \$2.40	e.l. \$2.90	e.l. \$3.45
No. 2 grade	2.25	2.70	3.20	2.15	2.00	3.10

Slate-surfaced roofing (red and green) in rolls of 108 sq. ft. costs \$4.25 per roll in carload lots and \$4.50 for smaller quantities.

Shingles, red and green slate finish, cost \$8.75 per square in carloads; \$9.00 in smaller quantities, in Philadelphia.

**ROOFING MATERIALS**—Prices per ton f.o.b. New York and Chicago:

Tar felt (14 lb. per square of 100 sq.ft.) per roll.....	\$3.50
Tar pitch (in 400-lb. bbl.) per 100 lb.....	2.00
Asphalt pitch (in barrels) per ton.....	54.50
Asphalt felt (light) per ton.....	123.00
Asphalt felt (heavy) per ton.....	127.00

**HOLLOW TILE**—Price per block in carload lots for hollow building tile:

	4x12x12	8x12x12	12x12x12
Minneapolis.....	\$1.152	\$2.016	\$3.168
St. Louis.....	.15	.260	.30
New Orleans.....	.23	.28	.30
Chicago.....	.1516	.2728	.4093
Cincinnati.....	.125	.2186	.3286
Birmingham.....	.135	.240	....

**LUMBER**—Price of pine per M in carload lots:

	1-In. Rough	2-In. T. and G.	8 x 8 In. x 20 Ft.
	10 In. x 16 Ft.	10 In. x 16 Ft.	
St. Louis.....	\$50.00	\$52.00	\$41.00
Birmingham.....	50.00	50.00	54.00
Cincinnati.....	55.00	50.00	50.00

**EXPLOSIVES**—Price per pound of dynamite in small lots and price per 25-lb. keg for black powder:

	Low Freezing	Gelatin	Black Powder
	20%	40%	60%
New York.....	\$0.3125	\$0.3425	\$2.30
Boston.....	.28	.31	.34
Kansas City.....	.2475	.30	.34
New Orleans.....	.2475	.2825	.3125
Seattle.....	.18	.2025	.225
Chicago.....	.2175	.2525	.2975
Minneapolis.....	.2067	.2476	.2782
St. Louis.....	.23	.27	.30
Los Angeles.....	.22	.27	.31

## MISCELLANEOUS

**GREASES**—Prices are as follows in the following cities in cents per pound for barrel lots:

	Cincinnati	St. Louis	Birmingham
Cup.....	8.5	8.9	8.5
Fiber or sponge.....	9	12@15	8.5
Transmission.....	10	12@15	8.5
Axle.....	5	6@6 1/2	5.5
Gear.....	6.5	8@9	8.5
Car journal.....	12 0	23@2	4.5

**BABBITT METAL**—Warehouse prices in cents per pound:

	New York	Cleveland	Chicago
	Current	One Year Ago	Current
Best grade.....	90.00	90.00	57.00
Commercial.....	50.00	50.50	21.00

**HOSE**—Following are prices of various classes of hose:

		Fire		50-Ft. Lengths
Underwriters' 2½-in.....				87c. per ft.
Common, 2½-in.....				30%
		Air		
		First Grade	Second Grade	Third Grade
1-in. per ft.....		\$0.60	\$0.40	\$0.30
First grade.....	20%	Steam—Discounts from list		
		Second grade.....	30%	Third grade..... 45%

**LEATHER BELTING**—Present discounts from list in fair quantities (1 doz. rolls):

	Light Grade	Medium Grade	Heavy Grade
	30%	25%	20%

**RAWHIDE LACING**—(For cut, best grade, 25%, 2nd grade, 30%. For laces in sides, best, 79c. per sq. ft.; 2nd, 75c. Semi-tanned: cut, 20%; sides, 83c. per sq. ft.)

**PACKING**—Prices per pound:

Rubber and duck for low-pressure steam.....	\$1.00
Asbestos for high-pressure steam.....	1.70
Duck and rubber for piston packing.....	1.00
Flax, regular.....	1.20
Flax, waterproofed.....	1.70
Compressed asbestos sheet.....	.98
Wire insertion asbestos sheet.....	1.50
Rubber sheet.....	.50
Rubber sheet, wire insertion.....	.70
Rubber sheet, duck insertion.....	.50
Rubber sheet, cloth insertion.....	.30
Asbestos packing, twisted or braided, and graphited, for valve stems and stuffing boxes.....	1.30
Asbestos wick, ¼- and 1-lb. balls.....	.85

**MANILA ROPE**—For rope smaller than 1-in. the price is ¼ to 2c. extra: while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: 1-in., 8 ft.; 1½-in., 6; 2-in., 4½; 2½-in., 3½; 3-in., 3; 3½-in., 2½; 4-in., 2; 4½-in., 1½; 5-in., 1; 6-in., ¾; 8-in., ½; 10-in., ¼; 12-in., 1/8. Following is price per pound for 1-in. and larger, in 1200-ft. coils:

Boston.....	\$0.37	Birmingham.....	\$0.324
New York.....	.29	Denver.....	.30
St. Louis.....	.27	Kansas City.....	.30
Chicago.....	.27	New Orleans.....	.28
Minneapolis.....	.29	Seattle.....	.28
San Francisco.....	.27	Los Angeles.....	.31

**PIPE AND BOILER COVERING**—Below are discounts and part of standard lists:

	PIPE COVERING	BLOCKS AND SHEETS
	Standard List	Price
Pipe Size	Per Lin. Ft.	per Sq. Ft.
1-in.....	\$0.27	\$0.27
2-in.....	.36	.30
3-in.....	.45	.45
4-in.....	.60	.60
6-in.....	.80	.75
8-in.....	1.10	.90
10-in.....	1.30	1.05
85% magnesia high pressure.....		List + 5%
For low-pressure heating and return lines.....		4-ply..... 40% off 3-ply..... 42% off 2-ply..... 44% off

**WIRING SUPPLIES**—New York prices for tape and solder are as follows:

Friction tape, 1-lb. rolls.....	55c. per lb.
Rubber tape, 1-lb. rolls.....	60c. per lb.
Wire solder, 50-lb. spools.....	42c. per lb.
Soldering paste, 2-oz. cans.....	\$1.20 per doz.

**COPPER WIRE**—Prices per 1000 ft. for rubber-covered wire in following cities:

	Single Braid	Double Braid	Duplex	Single Braid	Double Braid	Duplex
14.....	\$14.00	\$19.75	\$38.35	\$15.64	....	\$38.45
10.....	23.50	29.80	60.10	24.50	....	58.70
8.....	32.95	40.35	81.05	33.48	....	....
6.....	56.45	58.35	....	....	56.81	....
4.....	81.30	83.60	....	....	77.17	....
2.....	122.10	124.85	....	....	108.10	....
1.....	158.70	160.00	....	....	142.00	....
0.....	197.50	197.50	....	....	167.70	....
00.....	....	....	....	....	198.20	....
000.....	....	....	....	....	234.60	....
0000.....	....	....	....	....	279.60	....

**FREIGHT RATES**—On finished steel products in the Pittsburgh district including plates, structural shapes, merchant steel, bars, pipe fittings, plain and galvanized wire nails, rivets, spikes, flat sheets (except planished), chains, etc., the following freight rates per 1,000 lb. are effective:

Boston.....	\$0.41	New Orleans.....	\$0.51
Buffalo.....	.29	New York.....	.38
Chicago.....	.38	Pacific Coast (all rail).....	1.66 1/2
Cincinnati.....	.33	Philadelphia.....	.35
Cleveland.....	.24	St. Louis.....	.47
Denver.....	1.35	St. Paul.....	.69
Kansas City.....	.81	Detroit.....	.33
		Baltimore.....	.33 1/2

Note—Add 3% transportation tax. \*Minimum carload, 40,000 lb. †Minimum carload, 50,000 lb., structural steel only.